

FORM K

TECHNICAL RESPONSE FORM

System Architecture Requirements

Req ID	System Architecture (Section SA)	Required	Value Add
SA-001	The Toll System Provider shall provide equipment and technology that has already been designed, developed, tested, and currently is deployed on another AET System with a similar scope and in a similar or larger revenue operation. (i.e. multiple toll zones, reversible lanes, "off-the-shelf" BOS/CSC)	X	
	<p><b>Note:</b> The Proposer shall identify in this Technical Response Form the other AET systems on which Proposer's proposed equipment and technology currently are deployed.</p> <p><b>Proposer Response:</b>                      Kapsch fully complies with requirement SA-001 , and this compliance is described below:                      Kapsch is an International supplier of intelligent solutions, technology, and services for the global Intelligent Transportation Systems (ITS) market. Kapsch has performed <b>280 installations</b> in <b>41 countries</b> in North America, Europe, Australia, Latin America, Middle East, Asia Pacific and South Africa, and has supplied over <b>70 million transponders</b> for <b>over 18,000 equipped lanes</b>. Kapsch delivers proven end-to-end solutions from a single source. We provide state-of-the-art electronics, complete systems integration, and innovation in the areas of detection, capture, imaging, and communications for intelligent tolling systems, as well as furnishing a broad range of All Electronic Tolling (AET) solution support services. It is within this framework as a global solutions provider that has established Kapsch as a leader in the AET market.                      Kapsch TrafficCom's technologies and solutions have been deployed on the following All Electronic Toll (AET) systems which are of similar scope or with a larger revenue operation:</p> <ul style="list-style-type: none"> <li>• <b>E-ZPass Agencies</b> - equipping <b>3,700 ETC lanes</b> and supporting <b>26 million transponders</b> since 1994.</li> <li>• <b>Australia</b> - a total of seven multi-lane free-flow All Electronic Toll (AET) systems, including Back Office, Facility Host, and Image Review software and maintenance, around Melbourne, Sydney and Brisbane with <b>6 million transponders</b> since 1998.</li> <li>• <b>Austria</b> - a Nationwide Truck Toll System tolling <b>2,756 lanes</b> since 2003.</li> <li>• <b>Chile</b> - a turnkey solution including back office systems and services with <b>180 lanes</b> and <b>3 million transponders</b> since 2005.</li> <li>• <b>Czech Republic</b> - a turnkey solution including back office systems and services with <b>1,307 lanes</b> and <b>700,000 transponders</b> since 2006.</li> <li>• <b>Poland</b> - a multi-lane free-flow AET system with <b>414 toll sites</b> and <b>1.2 million transponders</b>, full Roadside, Facility Host, Image Review, and Back Office software deployment and operations including Customer Service, Violation Processing, and Transponder Distribution, since 2011.</li> <li>• <b>Belarus</b> - a Nationwide turnkey AET solution including full Roadside, Facility Host, Image Review, and Back Office software deployment and operations including Customer Service, Violation Processing, and Transponder Distribution, since 2013.</li> <li>• <b>South Africa</b> - a turnkey AET solution including back office systems and services with <b>184 lanes</b>, full Roadside, Facility Host, Image Review, and Back Office software deployment and operations including Customer Service, Violation Processing, and Transponder Distribution, since 2013.</li> <li>• <b>Dallas LBJ expressway</b> - a high-occupancy free-flow AET system with integrated maintenance online monitoring system (MOMS) and advanced traffic management system (ATMS) since 2014.</li> <li>• <b>Dallas NTE expressway</b> - a high-occupancy free-flow AET system with integrated MOMS and ATMS since 2014.</li> <li>• <b>New York State Thruway Authority</b> - Initial conversion Project for plaza/lane based tolling to free-flow AET, up-to <b>424 lanes</b> and <b>6.2 million transponders</b>.</li> <li>• <b>Puerto Rico Highway Transportation Authority</b> - a Nationwide toll collection system operation, maintenance, and upgrade, <b>78 lanes</b> and <b>3.0 million transponders</b></li> </ul> <p>Municipal Services Bureau (MSB) easily and accurately handles over 260,000 tolling transactions daily and responsibly administers over \$4.5 billion USD in receivables. By the end of 2015, the projected daily transactions will exceed 850,000 daily transactions with annual receivables exceeding \$5.0 billion USD. MSB offers a custom full service back office solution including image review, account and transponder management, payment processing, invoicing and video billing,</p>		

Req ID	System Architecture (Section SA)	Required	Value Add
	<p>violations processing and call center services to governmental entities nationwide. MSB has extensive experience in a variety of tolling projects including:</p> <ul style="list-style-type: none"> <li>• <b>Central Texas Regional Mobility Authority (CTRMA)</b></li> <li>• <b>North Texas Regional Mobility Authority (NETRMA)</b></li> <li>• <b>Cameron County Regional Mobility Authority (CCRMA)</b></li> <li>• <b>Camino Real Regional Mobility Authority (CRRMA)</b></li> <li>• <b>Tampa Hillsborough Expressway Authority (THEA)</b></li> <li>• <b>Miami Expressway Authority (MDX)</b></li> <li>• <b>Puerto Rico Highway Transportation Authority (PRHTA)</b></li> </ul> <p>All of the back office systems listed above are hosted at the facilities in Austin, TX. By utilizing advanced technology, data management tools, and leading-edge business practices, we always work actively to exceed the expectations of our clients. We currently work with more than 600 clients in 38 states and are licensed to collect throughout the United States. MSB distinguishes itself through superior Experience, Execution, and Ethics. The Company has achieved the Professional Practices Management System (PPMS) certification from the Association of Credit and Collections Professionals (ACA International).</p> <p>The Kapsch line of products are used extensively within Kapsch international and domestic AET solutions for more than twenty (20) years. Similarly, SICK-based laser detection and 3M AVC (formerly Idris) axle classification are both integral parts of the Kapsch system solutions and integrated with the Kapsch Toll Zone Controller. The Kapsch ETC reader, provided to LSIORB through the ETC Component Contract, is a stable product line used throughout the E-ZPass region with more recent updates for multi-protocol operation, now spanning a range of protocol options including: <i>IAG, 18000-6C, 18000-6B, SeGo, ATA and Allegro</i>.</p> <p>The Kapsch Team looks forward to working with LSIORB to fully leverage this rich AET system and subsystem product heritage for the benefit of the Louisville / Southern Indiana area.</p>		
SA-002	<p>The Toll System Provider shall provide a System which provides a future upgrade path throughout the Term of the Contract, including the extension.</p>	X	
	<p>Note: The Proposer shall describe in this Technical Response Form the current product lifecycle status and future upgrade path. Equipment swap-outs are acceptable.</p> <p><b>Proposer Response:</b>  Kapsch fully complies with requirement SA-002 , and this compliance is described below:  The proposed Kapsch Toll Collection System (TCS) for LSIORB is the current evolution of Kapsch, MSB and third-party subsystems that have been used as system modules in earlier AET deployments. They have been selected in part for their high-reliability and efficient maintenance processes, aligning the needs of LSIORB with the capabilities of our proven systems. These systems were designed with comparable life cycles to the LSIORB project -- through software update releases and controlled equipment swap outs based on standardized ICDs. The current status and life cycle details for the major system elements are provided in Table 1-1 below.</p>		

**Req ID**      **System Architecture (Section SA)**      **Required**      **Value Add**

Table 1-1 Kapsch System Information and Lifecycle

System Element	Version and Description	Lifecycle Comments
<b>Back Office - Customer Website</b>	Customer websites are customized to the needs of the particular authority. As such, the effective version of the website for LSIORB at release will be 1.0.	While our customer websites are custom from a presentation perspective in order to retain branding of the authority, much of the underlying functionality is common with the CRM application used in the CSC.
<b>Back Office - Customer Service Center Application</b>	The current version of the CSC application, which is based upon the Salesforce platform, is '14 Winter release (October 2014).	The platform we utilize in the CSC is based on the Salesforce CRM tool and as a result is updated as Salesforce versions the software. This is typically done quarterly in 'season' releases. Major versions are released on an annual basis and typically incorporate new functionality expanding the capabilities of the platform. Future versions will be provided to the LSIORB as they become available and are included in the pricing provided.
<b>Roadside - Vehicle Detection and Classification with axle count</b>	3M AVC (Ildris) Current version is 4.30t released March 2012	The pace of Ildris releases has slowed indicating maturity. 4.30s was released May 2011, 4.30u is the next planned release with no specific date. Releases 4.30s – 4.30t have not changed the interface and none are expected in 4.30u. Ildris was first released in 1996 with more than 1,200 installed lanes Worldwide to date
<b>Roadside – Laser Vehicle Detection and Classification</b>	The SICK laser scanner has been used in Kapsch projects as a key component of vehicle detection and volumetric classification globally with thousands of units deployed. Current version is 1.38 released July 2013	SICK laser products are used in many industry applications and well supported. Like most industrial devices, the cadence of change is slow, with firmware releases no more frequent than annually, and seldom changing the interface.
<b>Roadside System – Automatic Vehicle Identification</b>	Kapsch Multiprotocol Reader (MPR II) Current release is 2014mar06a-MPR2, released March 27, 2014	The Kapsch first release of the Multi-Protocol II Reader was September 2012. Release cadence is typically driven by specific customer needs, and bug fixing.
<b>Roadside System – License Plate Camera</b>	Kapsch VR-series current version is VR-X	The prior VR-2 camera has been widely used for many years, with more than 1,700 deployed in worldwide projects. The VR-X is our latest generation camera released in Mar-2014.
<b>Roadside System – Lane/Zone Controller</b>	Kapsch current release is version 1.2.0.3	Most recent release 26-Feb-2014 (1.2.0.3) deployed at Dallas LBJ and NTE managed lane facilities. Prior release of 2013-Q3.
<b>MOMS (Roadside &amp; Back Office)</b>	Kapsch current external release is version 4.0.9	Released in 5-Feb-2014 and deployed at Dallas LBJ managed lane facilities. Prior release was in Nov-2013.

SA-003	The Toll System Provider shall provide a System which provides redundancy for the TCS such that the TCS will meet and continue to meet all Performance Requirements as outlined in Section PR of the Technical Requirements at all times.	X	
--------	---	---	--

	<p>Note: The Proposer shall describe in this Technical Response Form the redundancy of the TCS for each subsystem, as well as addressing dual coverage where applicable.</p> <p><b>Proposer Response:</b>          Kapsch fully complies with requirement SA-003 , and this compliance is described below:          To first set the context, an overview of the Kapsch Toll Collection System (TCS) is provided below.</p>		
--	---	--	--

Req ID	System Architecture (Section SA)	Required	Value Add	
[REDACTED]	[REDACTED]			
	[REDACTED]			
	[REDACTED]			[REDACTED]
	[REDACTED]			[REDACTED]
	[REDACTED]			[REDACTED]
	[REDACTED]			[REDACTED]
	[REDACTED]			[REDACTED]
	[REDACTED]			[REDACTED]
	[REDACTED]			[REDACTED]
	[REDACTED]			[REDACTED]
	[REDACTED]			[REDACTED]
	[REDACTED]			[REDACTED]
	[REDACTED]			[REDACTED]

Req ID	System Architecture (Section SA)	Required	Value Add

Req ID	System Architecture (Section SA)	Required	Value Add
	<div style="background-color: black; width: 100%; height: 100%; min-height: 600px;"></div>		

Req ID	System Architecture (Section SA)	Required	Value Add
[Redacted]	[Redacted]		
	[Redacted]		

Req ID	System Architecture (Section SA)	Required	Value Add
	<div style="background-color: black; width: 100%; height: 100%;"></div>		
SA-004	<p>The Toll System Provider shall configure all servers, desktop and tablet computers to have virus protection and intrusion prevention Software that automatically obtains definition updates according to an approved, recommended, and configurable maintenance schedule provided in the Maintenance and Support Plan by the Toll System Provider.</p>	X	
	<p>Note: Virus protection Software is not applicable to Linux based platforms provided by the Toll System Provider.</p> <p><b>Proposer Response:</b></p> <div style="background-color: black; width: 100%; height: 100%;"></div>		
SA-005	<p>The Toll System Provider shall: 1) integrate the ETC into the Roadside System; 2) certify during the Installation and Delivery Phase and the TCS Operations and Maintenance Term that the Toll Zones are tuned and maintained to the ETC Contractor's specifications; 3) synchronize all ETC readers that are in the same Toll Zones; 4) analyze the site conditions, and install and configure all required sensors and Hardware in accordance with the Technical Requirements; 5) ensure full sensor coverage at all areas of the Toll Zone; 6) ensure front and rear ALPR cameras provide image coverage at all areas of the Toll Zone including during individual camera failures and excessive glare conditions and other extreme weather conditions; and 7) integrate all components of the Roadside System to provide a fully functional and operational TCS.</p>	X	
	<p>Note: The Proposer shall describe in this Technical Response Form its approach to fulfilling each of the above requirements.</p>		



Req ID	System Architecture (Section SA)	Required	Value Add
	<p><b>Proposer Response:</b>  Kapsch fully complies with requirement SA-005 , and this compliance is described below:</p> <p>1) Integrate the ETC into the Roadside System  As the awardee for the ETC Component, Kapsch is already providing the ETC equipment for this LSIORB project. Our reader is designed to support multi-protocol applications in high speed environments with the highest accuracies and performance in the industry. Our proven platform is used in thousands of revenue collection lanes around the country, extensively throughout the E-ZPass Interoperability Agencies Group, and in hundreds more lanes in Mexico and Canada. Kapsch will integrate and maximize the performance of these readers in concert with all other LSIORB lane equipment, while guaranteeing read rates per requirements of the LSIORB project.</p> <p>2) Certify Tuning of the ETC Equipment Throughout Project Lifecycle  With the Kapsch reader platform installed in thousands of lanes throughout the United States, Canada, and Mexico, Kapsch is confident our solution will provide LSIORB with unmatched performance on transponder reads for both the IAG and 6C protocols. Tuning for each site is somewhat unique since radio waves react differently to the surrounding gantries and equipment in each location. Specific experience mitigating RF issues is essential. The Kapsch integration team brings this knowledge and experience to the LSIORB project.</p> <p>3) ETC Reader Synchronization  With intimate knowledge of the selected ETC reader platform, Kapsch is most capable of maintaining appropriate reader synchronization throughout the project life cycle. It is critical the Kapsch readers, within the same toll zone or at any nearby toll zones, maintain synchronization to prevent interference. This in turn ensures full zone coverage is achieved across all travel lanes. Reader synchronization is achieved through physical connections between readers using appropriate firmware settings, and is frequently checked as part of on-going maintenance functions.</p> <p>4) Roadside Hardware Installation and Configuration  As prime contractor, Kapsch is responsible for providing and overseeing all installation services required by this Contract. All work will be done in compliance with NEC and all applicable Indiana and Kentucky electrical codes. Installation services for specific aspects of the contract will be performed by Kapsch personnel and the Kapsch Project Manager will be responsible for coordinating all installation activities with LSIORB, its Civil Contractors, and any other parties. Subcontractor and third-party coordination will be provided as outlined by managerial processes within the Project Management Plan. The Kapsch Installation Manager will oversee both Kapsch and subcontractor field activities, ensuring that equipment installation and configuration is fully consistent with proven procedures and techniques used successfully by Kapsch on thousands of lanes worldwide.</p> <p>5) Complete Sensor Coverage at all Toll Zones  As shown in Figure 1-3 above, sensor coverage will include all lanes and all shoulders. Drivable shoulders are equipped with ETC coverage, loops, overhead lasers coverage, and cameras. This also applies to vehicles straddling lanes, and vehicles located between travel lanes and shoulders. Benefits include:</p> <ul style="list-style-type: none"> <li>• No cars can pass through the tolling point unaccounted for and,</li> <li>• Usable roadway is maximized during lane closures. For example, a shoulder can serve as fully-tolled travel lane when a travel lane is closed</li> </ul> <p>6) Guaranteed Image Capture Performance  The proposed Image Capture system is the Kapsch ALPR. It is field-proven and successfully deployed in numerous locations within the US, as well as over 2,500 cameras in 32 other countries. To provide high image capture rates, there are multiple triggering sources. Triggers for the front plate are generated via the following sources:</p> <ul style="list-style-type: none"> <li>• Nearest-lane overhead scanner</li> <li>• Adjacent overhead scanner</li> <li>• vehicle tracking trigger</li> </ul> <p>For the rear plate camera the trigger sources are:</p>		

Req ID	System Architecture (Section SA)	Required	Value Add
	<ul style="list-style-type: none"> <li>• Nearest-lane overhead scanner,</li> <li>• Adjacent lane overhead scanner,</li> <li>• Idris main loop trigger</li> <li>• Vehicle tracking trigger.</li> </ul> <p>Through timing management these triggering mechanisms coincide at the same longitudinal location to provide complete sensor redundancy. This solution has been implemented in Kapsch's LBJ and NTE projects, two of the largest managed-lane AET projects in the US, and is also being implemented as a key part of the NYSTA AET project.</p> <p>7) Roadside System Integration Kapsch hardware is field-proven, reliable, and provides high-performance on thousands of lanes using Kapsch equipment around the world. Kapsch integration expertise has most recently been demonstrated in system-level deployments in Dallas LBJ and NTE, where they have continually met all timelines, schedules, performance, and reliability metrics. Kapsch will draw upon this extensive technical expertise -- and its on-time track record for the comparable Dallas AET TCS solutions -- to roll-out and maintain the hardware, software and services for a high-performance toll collection solution at the Ohio River Bridges.</p>		
SA-006	[Intentionally not used.]		
	<p><b>Proposer Response:</b> No response required.</p>		
SA-007	All data entered or generated in the TCS shall be retrievable through reports, applications and screens via tools by TCS authorized users at remote locations.	X	
	<p>Proposer Response: Kapsch fully complies with requirement SA-007 , and this compliance is described below: The proposed TCS architecture is shown in Figure 1-21 High-Level TCS Network Architecture with Clarifying Details below in SA-049. Connections from toll zone equipment in the Louisville / Southern Indiana Area to the Facility Host and BOS site will use secure, dedicated and independent redundant lines to better control link availability, data security and data delay. Within the Back Office System, access is controlled from the application layer via role-driven access. The Kapsch applications employ GUIs and support availability to authorized users, local and remote if the device they are using is authorized and connected to the system. Our applications will provide the Joint Board with a layer of visibility into each system for ease of operations and maintenance, providing essential analytics and reporting capabilities ensuring precise reconciliations. Additionally, the back-office system and operation is certified <b>PCI Level II compliant</b> and has successfully completed <b>full PCI DSS audits</b> for the past seven years. Please find the certificate of compliance below.</p>		



Figure 1-5 PCI DSS Certificate of Compliance

Figure 1-6 to Figure 1-10 below provide typical examples of information transaction information available to authorized users through remote connections while

Req ID System Architecture (Section SA) monitoring the Kapsch toll collection system.

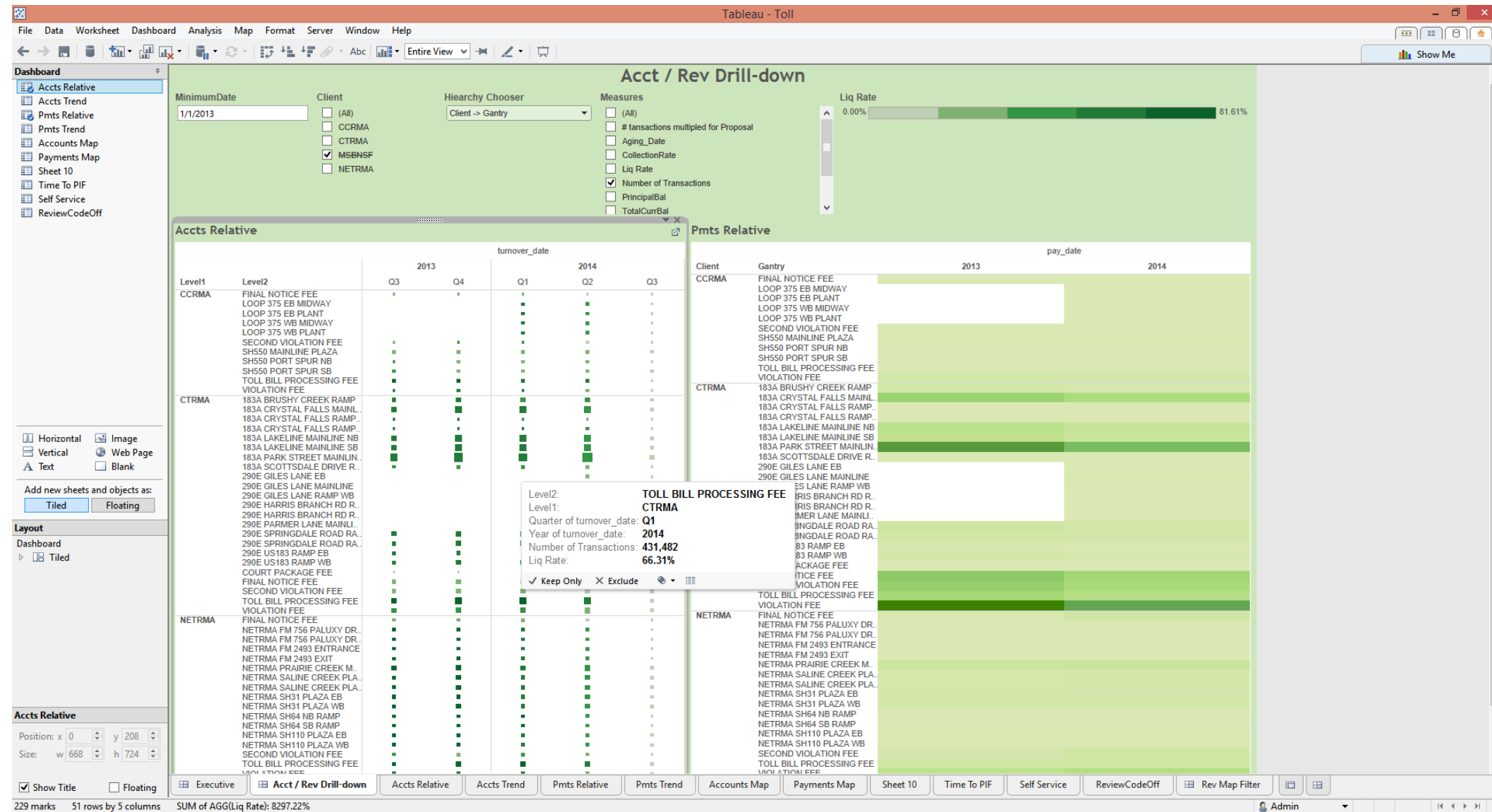


Figure 1-6 Back Office Transactoin Monitor Dashboard

Req ID System Architecture (Section SA)

View Data: Pmts Relative

Show Aliases  Show all fields

Copy Export All

Client	dnt_no	code	DebtorState	DebtorZip	dimClient_dnt_no	Gantry	Gantry	office	pay_date	amount	Size	Line	dnt_loc	coll_unit	commissionAmount	dd_loc	memo	Number of Records
CCRMA	CR3601	16	TX	79936	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,403,169	9	1
CCRMA	CR3601	17	TX	79936	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,403,169	9	1
CCRMA	CR3601	16	TX	79907	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,608,187	9	1
CCRMA	CR3601	17	TX	79907	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,608,187	9	1
CCRMA	CR3601	16	TX	79938	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,161,823	9	1
CCRMA	CR3601	17	TX	79938	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,161,823	9	1
CCRMA	CR3601	16	TX	79936	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,403,235	9	1
CCRMA	CR3601	17	TX	79936	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,403,235	9	1
CCRMA	CR3601	16	TX	79911	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,403,162	9	1
CCRMA	CR3601	17	TX	79911	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,403,162	9	1
CCRMA	CR3601	16	TX	79924	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,161,893	9	1
CCRMA	CR3601	17	TX	79924	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,161,893	9	1
CCRMA	CR3601	16	TX	79928	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,403,108	9	1
CCRMA	CR3601	17	TX	79928	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/24/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,403,108	9	1
CCRMA	CR3601	16	TX	79928	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,575,168	9	1
CCRMA	CR3601	17	TX	79928	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,575,168	9	1
CCRMA	CR3601	16	TX	79936	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,161,759	5	1
CCRMA	CR3601	17	TX	79936	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,161,759	5	1
CCRMA	CR3601	16	TX	79928	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,161,775	5	1
CCRMA	CR3601	17	TX	79928	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,161,775	5	1
CCRMA	CR3601	16	TX	79938	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,161,990	9	1
CCRMA	CR3601	17	TX	79938	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,161,990	9	1
CCRMA	CR3601	16	TX	78572	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.7100	0.7100	Null	66	37	0.0000	45,161,931	9	1
CCRMA	CR3601	17	TX	78572	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.0900	0.0900	Null	66	37	0.0900	45,161,931	9	1
CCRMA	CR3601	16	TX	79928	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,402,966	5	1
CCRMA	CR3601	17	TX	79928	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,402,966	5	1
CCRMA	CR3601	16	TX	79904	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,403,041	9	1
CCRMA	CR3601	17	TX	79904	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,403,041	9	1
CCRMA	CR3601	16	TX	79938	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,161,813	9	1
CCRMA	CR3601	17	TX	79938	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,161,813	9	1
CCRMA	CR3601	16	TX	79927	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.7100	0.7100	Null	66	0	0.0000	45,161,818	9	1
CCRMA	CR3601	17	TX	79927	CR3601	LOOP 375 EB PLANT	LOOP 375 EB PLANT	1	2/25/2014 12:00:00 AM	0.0900	0.0900	Null	66	0	0.0900	45,161,818	9	1

Summary Underlying 15,054 rows

Figure 1-7 Back Office Detailed Transaction Monitor Report

Req ID System Architecture (Section SA)

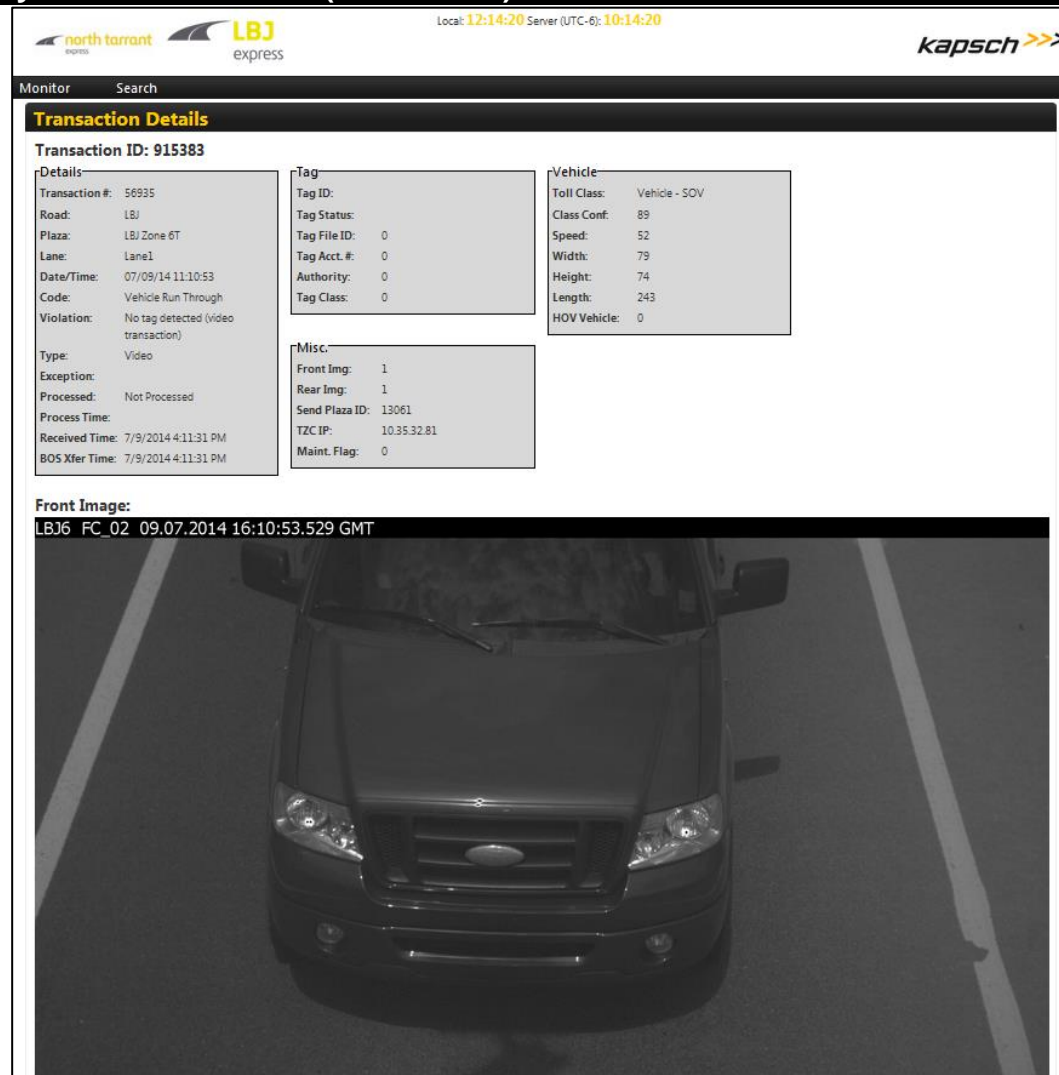


Figure 1-8 Roadside Transaction Detail

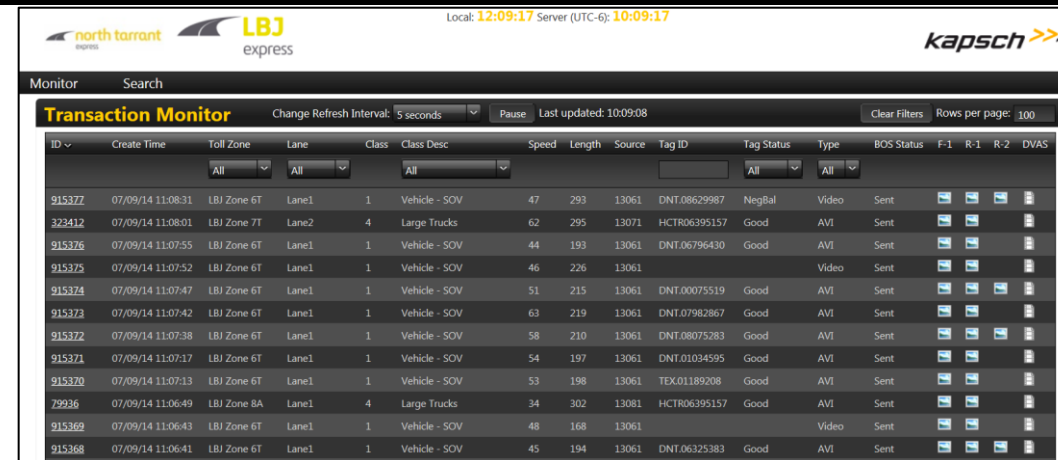


Figure 1-9 Roadside Transaction Monitor

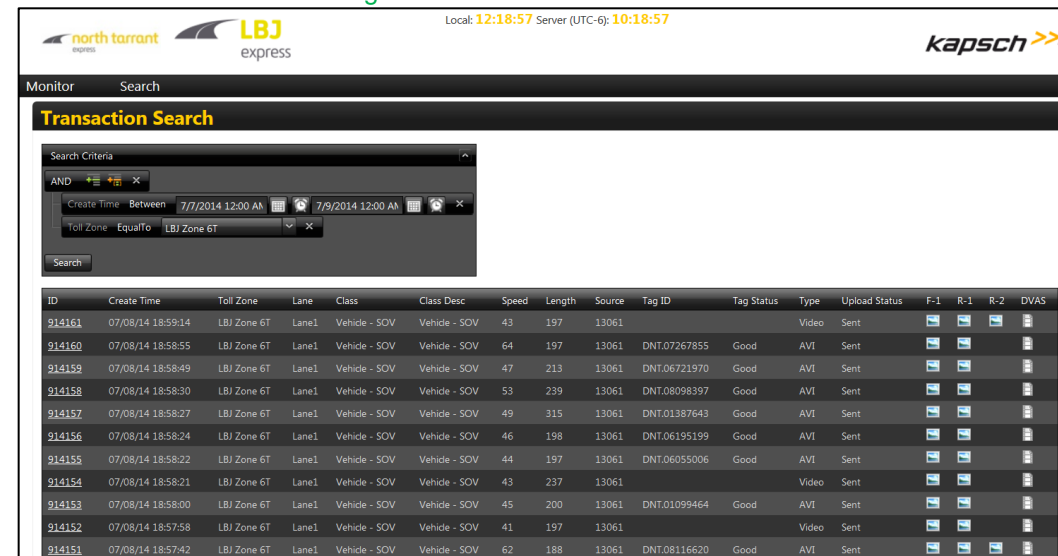


Figure 1-10 Roadside Transaction Search

SA-008 [Intentionally not used.]

[Intentionally not used.]

SA-009 All Traffic, Financial and Event Transactions and images shall be retained on-line for one (1) year after the date of Reconciliation, and shall be archived and stored for 10 years. Archived data shall be recovered and made available to the Joint Board within 48 hours of a request made by the Joint Board.

X

Proposer Response:

Kapsch fully complies with requirement SA-009 , and this compliance is described below:

Kapsch shall provide a fully managed infrastructure (IaaS) utilizing 100% virtualized computing and virtual SAN storage, and virtualized applications and database systems of the BOS. Within the RSS and BOS environments, all Traffic, Financial and Event transactions and images shall be retained on-line for one (1) year. These transactions shall then be archived for ten (10) years, or another configurable term per the Joint Board. Any archived data requests shall be made available to the Joint board within 48 hours of request. Kapsch shall expand BOS storage to meet all future needs of the Project. In addition, Kapsch shall establish a geographically distributed (multi-state) computing environment to ensure continuity of service and shall provide a 100% virtualized environment to allow for

Req ID	System Architecture (Section SA)	Required	Value Add
	<p>expansion of storage needs as they arise throughout the project. The virtualized environment provided by Kapsch shall permit Disaster Recovery processes which permit full active-active support, so that if the primary BOS fails a duplicate BOS is already in operations and there is no downtime or lost data in the switch-over to the secondary site.</p> <p>This full managed infrastructure has been implemented since 2013, and MSB currently manages over 600 clients in 41 states.</p>		
SA-010	All TCS system logs shall be retained on-line for one (1) year and then shall be archived and stored for 10 years.	X	
	<p>Proposer Response: Kapsch fully complies with requirement SA-010 , and this compliance is described below:</p> <p><b>Roadside</b> System logs produced at the roadside are maintained for one (1) year in an on-line buffer. These logs are sent to the Facility Host where they are retained, and ultimately archived. The roadside logs can be accessed by System authorized users at the roadside or at the Facility Host. The Facility Host produces logs that it retains on-line for a year and then archives these together with all roadside data for 10 years. Archives older than 10 years may be destroyed or retained based on operating practices dictated by the Joint Board operating entity. The data retention periods will be configured per SA-009, however these periods are changeable via configurable parameters.</p> <p><b>Back Office</b> Within the back office environment, all logs are maintained for one (1) year. These logs are archived upon a set schedule and retained/archived for a configurable amount of time. For the LSIORB project, our configuration will maintain logs in the Back Office for one (1) year and archived for ten (10) years, or another configurable term per the Joint Board and Indiana/Kentucky retention laws.</p>		
SA-011	All data except TCS system logs shall be retained on the server in accordance with requirements of Indiana and Kentucky state statutes and administrative codes as may be in effect during the Term of the Agreement.	X	
	<p>Proposer Response: Kapsch fully complies with requirement SA-011 , and this compliance is described below:</p> <p>All of Kapsch initial data retention times meet or exceed the following current requirements in the state of Indiana:</p> <ul style="list-style-type: none"> <li>• Potentially up to 10-years for state information related to proving a driver violation (IC9-30-10-3)</li> <li>• Up to 3 calendar years for all state agency records and general files (GRADM-4, General files)</li> </ul> <p>All of Kapsch initial data retention times meet or exceed the following current requirements in the Commonwealth of Kentucky:</p> <ul style="list-style-type: none"> <li>• Up to 3 years for right to inspect and audit records from date of final payment (45A.150)</li> <li>• 5 years for inspection of subcontractors place of business and audit of records from date of final payment (45A.410)</li> </ul> <p>As stated above in SA-009 and SA-010, the Kapsch Team shall provide system logs retention limits which are configurable within the system. Any changes to these requirements can be incorporated quickly and efficiently with minimal effort. As with any project involving government oversight, the rules regarding data retention can potentially change. Kapsch understands this and has designed its Toll Collection System to support comparable needs on previous projects.</p> <p>Kapsch shall provide system logs retention limits which are configurable within the system and will incorporate changes to rules regarding data retention quickly and efficiently.</p>		
SA-012	The Toll System Provider shall provide a quarterly written report that shows data backup and retention status for all elements of the System (e.g. Roadside System, BOS); and System access audit reports shall show the user access data and modification to the access made.	X	
	<p>Proposer Response: Kapsch complies with requirement SA-012 , and this compliance is described below:</p>		

Req ID System Architecture (Section SA)

Kapsch maintains records of all data backups along with their retention status and will provide quarterly reports (see Figure 1-13 in SA-014 for example) as well as any periodic ad-hoc report request required.

The Roadside System utilizes real-time database transfer of all completed Traffic Transactions from the Toll Zone Controller (TZC) to the back office for permanent storage and retention. The Roadside System architecture includes extensive storage space and redundancy that virtually eliminates any downtime and disruption and eliminates the need for off-site backups.

The Facility Host collects all transactional data from the toll zones within the entire Roadside System and provides a single database of all traffic information. The Kapsch backup and retention design unifies the backup and archival processes to ensure the entire system is fully redundant with multiple disaster recovery solutions. Kapsch utilizes the EMC Avamar de-duplication solution, overview shown in Figure 1-11, providing fast daily backups for virtualized environments, NAS systems, desktops, laptops, remote offices and all business critical applications. EMC Avamar has a built-in dashboard system, Figure 1-12, which can quickly highlight the status of the backups. The Management Console Server (MCS) provides centralized management including access policy management, scheduling of backups, restoration of backups, and monitoring with extensive reporting capabilities.

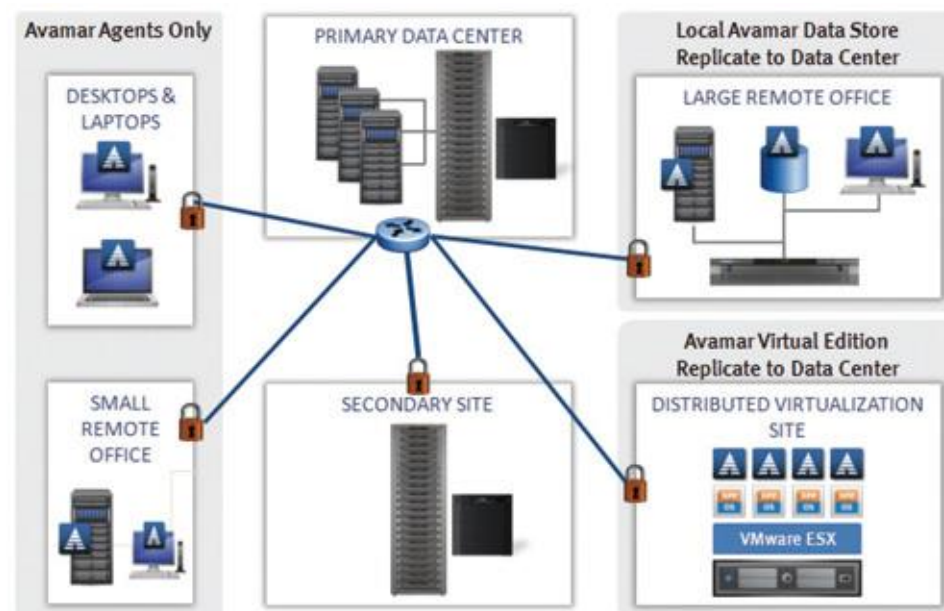


Figure 1-11 EMC Avamar High-Level Overview

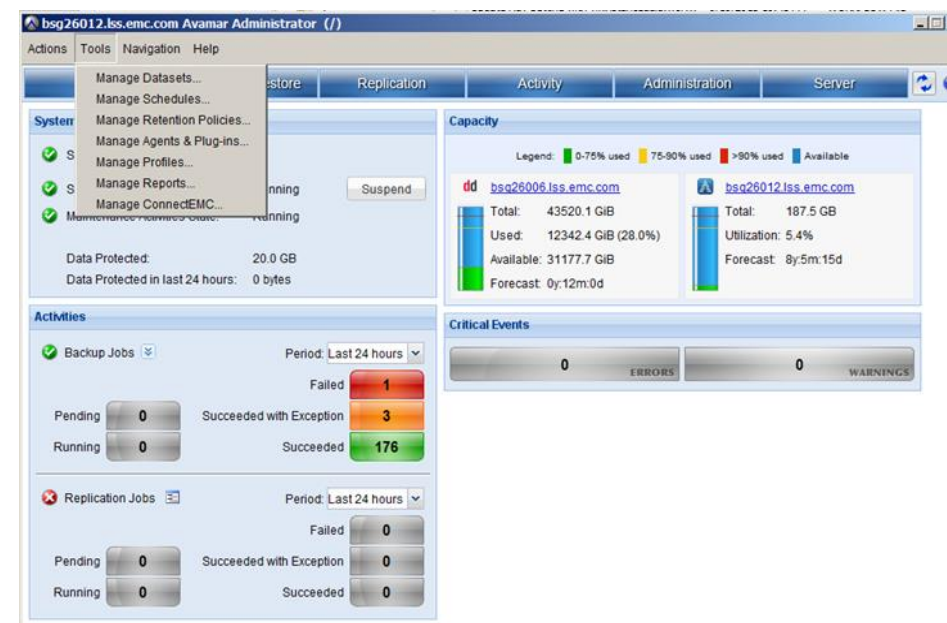


Figure 1-12 EMC Avamar Data Backup Dashboard

The Kapsch solution also provides an audit system that maintains all records for system access, end user access data and any modification to access. SA-032 and SA-033 address the access controls applied to the data prior to backups. In addition to the access controls, the EMC Avamar hardware is physically located with a secure environment and the Avamar application logs all software access, activities and commands including backup, restore, archival and expiration operations.

SA-013	The Toll System Provider shall provide a backup and archiving schedule and Plan for the System and staff (if any) required for backing up the System. The backup Plan (included in the Maintenance and Support Plan) shall include data type and frequency of backup. Data related to the following shall be included in the backup Plan: application and associated configuration, Transaction and data information, database, operating systems, account management system, and Transaction system.	X	
--------	---	---	--

Proposer Response:  
 Kapsch complies with requirement SA-013 , and this compliance is described below:  
 Kapsch provides a Data Backup Plan for the systems which details schedules for each data type and the frequency of the backup along with any staffing requirements. Additionally, the Plan will address the retention time of the data, specific archival rules, data formats, and the permissible means of storage, access, encryption, and will address any privacy and "need to know" concerns. The following systems will be included in the plan and maintained per the requirements of



Req ID	System Architecture (Section SA)	Required	Value Add
	<p>SA-009 and SA-010:</p> <ul style="list-style-type: none"> <li>• application and associated configuration,</li> <li>• transaction and data information,</li> <li>• database,</li> <li>• operating systems,</li> <li>• account management system, and</li> <li>• transaction system.</li> </ul> <p>This plan will be executed within the back office environment and in accordance with the Joint Board designated retention policies, procedures and state statutes.</p>		
SA-014	It is desired that the Toll System Provider provide fully automated data archival and purging without the assistance of a staff member.		X
	<p><b>Note: The Proposer shall describe in this Technical Response Form their technical approach to meet the above requirements.</b></p> <p>Proposer Response:  Kapsch implements Value-Add SA-014, and this compliance is described below:  Kapsch shall provide an automated backup, archival and purging system that operates without the assistance of a staff member.  Kapsch currently utilizes EMC's Avamar system. Avamar facilitates fast, daily full backups for virtual environments, remote offices, enterprise applications, network-attached storage (NAS) servers, and desktops/laptops. DE duplicated backup eliminates lengthy full backups by sending only changed blocks and reducing network traffic through Network Data Management Protocol (NDMP) acceleration. High-performance multi-streaming is used to handle backup, recovery and purge that is centralized and streamlined in a single user interface.  Avamar ensures application-consistent backup and recovery for Microsoft, Oracle, and SAP enterprise applications with high-performance duplication and advanced visibility and control for application owners and authorized users. Avamar leverages existing local area network (LAN) and wide area network (WAN) bandwidth for enterprise-wide and remote/branch office backup and recovery. The Data Store features redundant power and networking, redundant array of independent disks (RAID), and patented redundant array of independent nodes (RAIN) technology to provide uninterrupted data accessibility. Daily data systems checks ensure recoverability whenever needed. The image below is a representative screenshot from the daily reporting module; reports can be customized, scheduled, and subscribed or run ad-hoc as required.</p>		

Req ID System Architecture (Section SA)

status_code	error_code	scheduled_start_ts	scheduled_end_ts	started_ts	completed_ts	type	effective_path	display_name
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:05 CDT 2014	Mon Jun 30 20:08:50 CDT 2014	Scheduled Backup	/03 Default Dataset	gla-dc03.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:05 CDT 2014	Mon Jun 30 20:15:08 CDT 2014	Scheduled Backup	/08 Default Dataset	gla-net05.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:08 CDT 2014	Mon Jun 30 20:15:52 CDT 2014	Scheduled Backup	/Gila/gila-ftp01	gila-ftp01.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:05 CDT 2014	Mon Jun 30 20:18:50 CDT 2014	Scheduled Backup	/03 Default Dataset	gla-dc01.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:05 CDT 2014	Mon Jun 30 20:20:54 CDT 2014	Scheduled Backup	/08 Default Dataset	gla-tiapp02.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:05 CDT 2014	Mon Jun 30 20:21:14 CDT 2014	Scheduled Backup	/03 Default Dataset	gla-dc04.gilacorp.com
30000	0	Mon Jun 30 23:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 23:00:00 CDT 2014	Mon Jun 30 23:04:40 CDT 2014	Scheduled Backup	/Gila/GILA-EXC01-FS	gla-exc02.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:08 CDT 2014	Mon Jun 30 20:26:50 CDT 2014	Scheduled Backup	/08 Default Dataset	gla-sql05.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:08 CDT 2014	Mon Jun 30 21:20:26 CDT 2014	Scheduled Backup	/08 Default Dataset	gla-tidb01.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:08 CDT 2014	Mon Jun 30 21:43:46 CDT 2014	Scheduled Backup	/Gila/GILA-EXC02-ExchangeVSS	gla-exc02.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:05 CDT 2014	Mon Jun 30 22:38:51 CDT 2014	Scheduled Backup	/08 Default Dataset	gla-tirpt02.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:06 CDT 2014	Mon Jun 30 22:45:16 CDT 2014	Scheduled Backup	/08 Default Dataset	gla-tidb02.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:05 CDT 2014	Mon Jun 30 20:04:08 CDT 2014	Scheduled Backup	/08 Default Dataset	gla-app02.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:05 CDT 2014	Mon Jun 30 20:04:38 CDT 2014	Scheduled Backup	/08 Default Dataset	gla-web02.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:08 CDT 2014	Mon Jun 30 20:05:53 CDT 2014	Scheduled Backup	/Default Dataset	ubuntu.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:05 CDT 2014	Mon Jun 30 20:11:37 CDT 2014	Scheduled Backup	/08 Default Dataset	gla-net02.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:08 CDT 2014	Mon Jun 30 20:13:20 CDT 2014	Scheduled Backup	/Default Dataset	gla-crs
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:08 CDT 2014	Mon Jun 30 20:28:51 CDT 2014	Scheduled Backup	/08 Default Dataset	gla-dwrpt01.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:05 CDT 2014	Mon Jun 30 20:34:59 CDT 2014	Scheduled Backup	/Default Dataset	msbcrs.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:05 CDT 2014	Mon Jun 30 20:48:53 CDT 2014	Scheduled Backup	/Default Dataset	gla-dps01.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:05 CDT 2014	Mon Jun 30 21:07:17 CDT 2014	Scheduled Backup	/03 Default Dataset	gla-net04.gilacorp.com
30000	0	Mon Jun 30 23:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 23:04:54 CDT 2014	Mon Jun 30 23:21:48 CDT 2014	Scheduled Backup	/Gila/GILA-EXC01-FS	gla-exc02.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:08 CDT 2014	Tue Jul 01 01:53:19 CDT 2014	Scheduled Backup	/08 Default Dataset	gla-fps01.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:08 CDT 2014	Tue Jul 01 04:00:06 CDT 2014	Scheduled Backup	/GILA03	gla03.gilacorp.com
30000	0	Mon Jun 30 20:00:00 CDT 2014	Tue Jul 01 08:00:00 CDT 2014	Mon Jun 30 20:00:08 CDT 2014	Mon Jun 30 20:05:47 CDT 2014	Scheduled Backup	/08 Default Dataset	gla-tirot01.gilacorp.com

Figure 1-13 EMC Avamar Backup Report

EMC's Avamar system is capable of bare metal restore allowing administrators to completely restore entire servers by leveraging system state snapshots, or file level restores when only individual file restores are required. Once servers are configured to utilize the Avamar backup, automatic nightly backups are performed without requiring administrator intervention. After the retention policy is applied to a particular dataset, the dataset will expire and be purged without any user intervention. Policies can be changed if longer or shorter retention times are needed to match any updates to state statutes.

**System Scalability**

SA-015 The Toll System Provider shall provide a communications bandwidth sufficient to handle all System functions and ensure the data collected by the Roadside System is accessible from the CSC and TOC in near-real-time. Near-real-time means the user actions necessary to remotely access the TCS are of duration less than 2 seconds.

X

Note: The Proposer's Response shall include the expected response times to retrieve and view CCTV video, TCS images, and Transactions from a user in the CSC and TOC.

Proposer Response:  
Kapsch fully complies with requirement SA-015 , and this compliance is described below:  
**Systems Functions**

Req ID	System Architecture (Section SA)	Required	Value Add								
	<p>The systems functions performed within the TCS that are affected by communications bandwidth include the following transfers from each toll zone to the Facility Host at the BOS site:</p> <ul style="list-style-type: none"> <li>• Traffic Transactions</li> <li>• Event Transactions from MOMS at the toll zone to MOMS at the Facility Host</li> <li>• Background transfer of images associated with Traffic Transactions</li> <li>• Background transfer of subsystem transactions for centralized storage</li> <li>• Tag and license plate files/lists</li> </ul> <table border="1"> <thead> <tr> <th>System</th> <th>Response Time (Estimated)</th> </tr> </thead> <tbody> <tr> <td>CCTV video</td> <td>&lt;2 seconds</td> </tr> <tr> <td>TCS images</td> <td>&lt;2 seconds</td> </tr> <tr> <td>Transactions</td> <td>&lt;2 seconds</td> </tr> </tbody> </table> <p>The communications link from the Downtown Equipment Pad to the Facility Host in Austin Texas requires 16 Mbps to handle all systems functions based on a 13 simultaneous lanes of traffic each carrying up to 1200 vehicles per hour as well as an Average Daily Traffic (ADT) of 100,000 vehicles for all bridges. The communications link from the East End Equipment Pad to the Facility Host in Austin Texas requires 6 Mbps to handle all systems functions based on 4 simultaneous lanes of traffic each carrying up to 1200 vehicles per hour as well as an Average Daily Traffic (ADT) of 100,000 vehicles for all bridges. The Systems functions also include the near-real-time transfer of one 2-Mbps CCTV stream from each CCTV camera monitoring toll rates signs to the Toll Operations Center (TOC) in Dallas Texas.</p> <p><b>Remote User Access from CSC and TOC</b> Users at the Customer Service Center (CSC) and Toll Operations Center (TOC) can select any needed information within the TCS via an access control layer that is part of the Back Office System (BOS). The BOS access layer determines if the remote user is permitted to access the requested TCS device or server and uses LDAP to confirm, and log, that permission upon request from the affected device or server.</p> <p><b>CCTV video</b> There are three separate CCTV systems provided by the Toll System Provider (TSP) serving three separate purposes:</p> <ul style="list-style-type: none"> <li>• Monitoring the displayed toll rates on the toll rate signs</li> <li>• Monitoring physical access to toll equipment and facilities</li> <li>• Auditing the creation of Traffic Transactions by observing corresponding vehicle movements under the toll gantries</li> </ul> <p>Remote user access to these CCTV systems involves pan/tilt/zoom controls for the PTZ cameras used for monitoring of toll displays and physical access or involves monitoring a video stream from a camera used for auditing the creation of Transactions. These cameras are at the toll zones, Changeable Message Signs and building used by the TSP.</p> <p>Remote user access also involves replay of CCTV images stored on Digital Video Recorders (DVRs). DVR storage for the cameras used for auditing the creation of Traffic Transactions is at each toll zone. DVR storage for monitoring toll displays and physical access is at the Traffic Operations Center (TOC).</p> <p>The communications links from the Downtown Equipment Pad and the East End Equipment Pad each have an additional bandwidth available beyond their peak outbound rates mentioned above to fully address Systems functions, in order to accommodate up to 10 remote users (per AC-021) receiving 2 Mbps CCTV streams. The pricing for the flow-through data communications costs on these links is based on monthly rate that supports two 2 Mbps CCTV streams even under peak per – lane traffic conditions, with an additional eight 2-Mbps streams being supported with the payment of additional per-MByte charges to the Communications Service Provider. This is considered a reasonable cost baseline that is unlikely if ever to be violated since when 10 remote users are accessing video it will almost never be simultaneous with traffic conditions of 1200 vehicles/hour/lane, all ten from the same toll zone, or all ten looking at different CCTV streams. In cases where multiple remote users view the same video stream, the CCTV camera or DVR will send multi-cast packets the corresponding bandwidth from the toll zone will not exceed that of the initial user even if 9 more are also watching.</p> <p>The communications bandwidth from the TOC is also able to support up to 10 simultaneous remote users viewing CCTV video from DVR storage of video streams from cameras monitoring toll displays and physical access. The remote user’s ability to select and receive a specific CCTV video stream within 2 seconds also depends on the bandwidth of the communications links from the user to the selected device. All of the communications links cited above have the same bandwidth in each direction, even though only a small fraction of that bandwidth is actually needed on the links toward the selected device. This excess bandwidth permits</p>	System	Response Time (Estimated)	CCTV video	<2 seconds	TCS images	<2 seconds	Transactions	<2 seconds		
System	Response Time (Estimated)										
CCTV video	<2 seconds										
TCS images	<2 seconds										
Transactions	<2 seconds										

Req ID	System Architecture (Section SA)	Required	Value Add																								
	<p>remote users commands to be received at the selected device within milliseconds, resulting in a quick response with no noticeable delay compared to that of an on-site user.</p> <p><b>TCS images</b> All TCS images are immediately transferred from the roadside toll zones to the Facility Host for use in ALPR operations, viewing from online storage, and, retrieval from archival storage. When remote users select and view these images, the response time is affected only by their Internet link to the Facility Host in Austin Texas. Kapsch routinely uses VPN access through the public Internet to view images stored at project-specific locations, such as our LBJ Toll Operations Center in Dallas, with response times of less than 2 seconds.</p> <p><b>Transactions</b> All Traffic Transactions and MOMS Event Transactions are immediately transferred from the roadside toll zones to the Facility Host for subsequent processing steps, viewing from online storage, and, retrieval from archival storage. When remote users select and view these Transactions and other Financial Transactions from the Back Office, the response time is affected only by their Internet link to the Facility Host and BOS located in Austin Texas. Kapsch routinely uses VPN access through the public Internet to view transaction data stored at project-specific locations, such as our LBJ Toll Operations Center in Dallas, with response times of less than 2 seconds.</p> <p><b>Summary</b> As discussed above, the bandwidths on the links to/from the toll zones to the Facility Host are as shown in Table 1-3 below.</p> <p style="text-align: center;">Table 1-3 Link Bandwidths Sized for Systems Functions and Remote User Access</p> <table border="1"> <thead> <tr> <th>Item</th> <th>Downtown Toll Zones (Mbps)</th> <th>East End Toll Zones (Mbps)</th> </tr> </thead> <tbody> <tr> <td>Systems functions</td> <td>16</td> <td>6</td> </tr> <tr> <td>Allowance for two 2-Mbps remote users</td> <td>4</td> <td>4</td> </tr> <tr> <td>Baseline rate for CSP billing plan</td> <td>20</td> <td>10</td> </tr> <tr> <td>Eight more remote users for a total of 10 remote users</td> <td>16</td> <td>16</td> </tr> <tr> <td><b>TOTAL PEAK RATE</b></td> <td><b>36</b></td> <td><b>26</b></td> </tr> <tr> <td><b>Physical capacity of the CSP link</b></td> <td><b>50</b></td> <td><b>50</b></td> </tr> <tr> <td><b>Excess margin against requirements</b></td> <td><b>14</b></td> <td><b>24</b></td> </tr> </tbody> </table> <p>Although the baseline rate assumes an Average Daily Traffic (ADT) of 100,000 vehicles for all bridges, the margin shown above provides ample room for accommodating higher ADTs by changing plans with the CSP and without any change to the physical links to the toll zones.</p>	Item	Downtown Toll Zones (Mbps)	East End Toll Zones (Mbps)	Systems functions	16	6	Allowance for two 2-Mbps remote users	4	4	Baseline rate for CSP billing plan	20	10	Eight more remote users for a total of 10 remote users	16	16	<b>TOTAL PEAK RATE</b>	<b>36</b>	<b>26</b>	<b>Physical capacity of the CSP link</b>	<b>50</b>	<b>50</b>	<b>Excess margin against requirements</b>	<b>14</b>	<b>24</b>		
Item	Downtown Toll Zones (Mbps)	East End Toll Zones (Mbps)																									
Systems functions	16	6																									
Allowance for two 2-Mbps remote users	4	4																									
Baseline rate for CSP billing plan	20	10																									
Eight more remote users for a total of 10 remote users	16	16																									
<b>TOTAL PEAK RATE</b>	<b>36</b>	<b>26</b>																									
<b>Physical capacity of the CSP link</b>	<b>50</b>	<b>50</b>																									
<b>Excess margin against requirements</b>	<b>14</b>	<b>24</b>																									
SA-016	The TCS database management system shall be scalable to process at least five million (5,000,000) Transactions per day plus all associated ancillary messages without major architecture changes to the database management system.	X																									
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement SA-016 , and this compliance is described below: The Kapsch roadside systems (The Toll Zone Controller) use an Oracle 12c database deployed on a RAID array that can be physically expanded. Oracle data management provides many tools for moving and growing the underlying table space and database files to make use of the physical space. These tools allow an administrator to ensure that a systems growth can be accommodated.</p>																										

Req ID	System Architecture (Section SA)	Required	Value Add
	<p>Our planning ensures that the deployment is sized for the capacity of data generated from all sources while supporting 5 million transactions per day. In the back office similar techniques are used with the MSSQL data system which also provides management tools that allow expanding and adding data space. Using SAN technology for central storage further facilitates expanding physical storage while the management systems of MSSQL allow using this space. All management techniques are well known and commonly encountered in industry.</p> <p>The Back Office is implemented on a VM ware solution, which allows for additional processing to be provisioned as needed without major architectural changes. Not only does this provide high availability options, but also support expansion and distribution of workload.</p>		
SA-017	<p>The TCS storage shall be scalable to store at least five million (5,000,000) Transactions per day, which number is intended to include all Traffic Transactions, Financial Transactions and Event Transactions, without major architecture changes to the storage system for at least one (1) year after the date of Reconciliation.</p>	X	
	<p>Note: The Proposer shall size the system to work in accordance with the expected traffic based on information provided in the Traffic and Revenue Study provided to KYTC by Steer Davies Gleave. However, it is up to the Proposer to describe how the system will scale to meet this requirement. This could be done upon initial deployment or scalable as required through the term of the Contract to meet all Technical Requirements.</p> <p>Proposer Response:  Kapsch fully complies with requirement SA-017 , and this compliance is described below:  As stated above in Section SA-009, the Kapsch TCS is built around a 100% virtualized computing and virtual SAN storage environment. This virtualized environment allows us to expand storage needs as they arise throughout the project. Our anticipated storage needs are in the 25-40 TB range.  The virtualized environment allows for gradual expansion of storage needs throughout the life of the project. Any major architectural changes required by the Joint Board throughout the project can instantly be realized with extensive expansion of the storage capacity (e.g. requiring twice as many images per transaction from the original amount). Please see Table 1-4 Projected Two-Year Online BOS Storage Needs in Section SA-018 for additional information on the storage needs of the system.</p>		
SA-018	<p>The TCS must retain Violation enforcement images and associated Transactions online in the BOS for one (1) year after the date of Reconciliation.</p>	X	
	<p>Note: Valid ETC Traffic Transactions may be removed after they have gone through the OCR process and validated that they are not on the Watch List.</p> <p>Proposer Response:  Kapsch fully complies with requirement SA-018 , and this compliance is described below:  As with all storage needs for this system, the Kapsch TCS utilizes virtualized SAN storage environment for high-availability, redundant storage needs. The BOS has configurable settings on image retention for violations enforcement images. Our typical retention policy has violation images retrievable in periods ranging from one to three (1-3) years. The configuration for LSIORB will allow for one (1) year of retention, and if the policy changes per the Joint Board and/or Indiana/Kentucky data retention laws, the system is easily configurable to change the timeframe of image storage.  In addition to any changes in business rules, the percentage of violators over time can vary. Our solution allows for any percentage of violators on the system. With a fully expandable storage solution, unanticipated changes can easily and instantly be supported.  After discussion with the Joint Board, Kapsch Team may elect to reduce the amount of online image storage -- and even 10-year archival image storage per SA-009 and SA-011 -- by deleting images for settled and reconciled ETC Transactions in accordance with the LSIORB note in requirement SA-018. Depending upon transponder penetration rates in the Louisville &amp; Southern Indiana area, this could significantly reduce the two-year storage projections shown below in Table 1-4. Table 1-4 below is based on two-years of BOS online storage for up to 125,000 vehicles per date with each Transaction having a maximum size of 2 KB. It also includes allowances for subsystem transactions and ALPR images from the toll zones based on a total LSIORB Average Daily Traffic (ADT) of 125,000 vehicles and an image storage size of 500 KB and one front and rear vehicle image for every non-ETC vehicle passage and an assumed average transponder penetration rate of 30% across the initial two years.. After items cease to be available in BOS online storage they are still available from archival storage.</p>		

Req ID	System Architecture (Section SA)	Required	Value Add															
	<p style="text-align: center; color: green;">Table 1-4 Projected Two-Year Online BOS Storage Needs</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #ffff00;">Data Type</th> <th style="background-color: #ffff00;">Unit Size (KB)</th> <th style="background-color: #ffff00;">One-Year Online BOS Storage (TB)</th> </tr> </thead> <tbody> <tr> <td style="background-color: #ffff00;">Transactions (Traffic, Financial, Event)</td> <td style="background-color: #ffff00;">2</td> <td style="background-color: #ffff00;">0.5</td> </tr> <tr> <td style="background-color: #ffff00;">ALPR Images</td> <td style="background-color: #ffff00;">400</td> <td style="background-color: #ffff00;">27</td> </tr> <tr> <td style="background-color: #ffff00;">Subsystem transactions</td> <td style="background-color: #ffff00;">2</td> <td style="background-color: #ffff00;">0.7</td> </tr> <tr> <td style="background-color: #ffff00;">TOTAL</td> <td style="background-color: #ffff00;"></td> <td style="background-color: #ffff00;">~29TB</td> </tr> </tbody> </table>	Data Type	Unit Size (KB)	One-Year Online BOS Storage (TB)	Transactions (Traffic, Financial, Event)	2	0.5	ALPR Images	400	27	Subsystem transactions	2	0.7	TOTAL		~29TB		
Data Type	Unit Size (KB)	One-Year Online BOS Storage (TB)																
Transactions (Traffic, Financial, Event)	2	0.5																
ALPR Images	400	27																
Subsystem transactions	2	0.7																
TOTAL		~29TB																
SA-019	<p>The TCS BOS shall be configured and sized to support at least fifty (50) concurrent users, which shall include 10 concurrent Joint Board users, and shall also support a growth rate of 15% per annum without any degradation in performance.</p>	X																
	<p>Note: This requirement assumes that customers will only access the System from the Customer Website and customer access is not included in this Technical Requirement.</p> <p>Proposer Response:  <span style="color: green;">Kapsch fully complies with requirement SA-019 , and this compliance is described below:  The requirements of supporting concurrent users are dependent upon the software solution utilized for a project and the hardware components running that software solution. The Kapsch TCS is presently sized to support over 75 users for the CTRMA project. As a similar sized project, we have optimized our system to handle this initial capacity and have load tested to support more than double the initial amount for CTRMA, 150 concurrent users. With the LSIORB needs of 15% growth anticipation year over year, the proposed solution has been sized to support at minimum of 150 concurrent users.  Our high-performance hardware platform has the necessary headroom to handle the anticipated growth of the project as well as additional room beyond that anticipated.</span></p>																	
SA-020	<p>The TCS shall provide load balancing in accordance with the RS, SA and BO sections of the Technical Requirements.</p>	X																
	<p>Note: The Proposer shall describe in this Technical Response Form the manner in which load balancing of the TCS will be provided, and how Proposer will describe such load balancing in the System Documentation.</p> <p>Proposer Response:  <span style="color: green;">Kapsch complies with requirement SA-020 , and this compliance is described below:  Loading balancing is used in several ways within the Kapsch Toll Collection System to maximize the efficient use of available resources. Traffic Transactions and Event Transactions are transmitted with high-priority from Toll Zone Controllers to the Facility Host, whereas vehicle image transfers will have lower priority in order to simultaneously meet performance requirements and keep peak data rates paid to Commercial Service Providers to a minimum. The Kapsch TCS also balances system access resources across all remote users so that when the number of remote users is less than the maximum, all online users experience some improvement with respect to maximum allowed response times. The TCS processing resources and communications links have been sized to fully accommodate all core systems functions, plus an allowance for growth in traffic volumes per SA-019, while still maintaining positive margin against performance requirements. The system documentation provided at start of revenue service will fully describe these load-balancing features and configurable parameters associated with them.</span></p>																	
SA-021	<p>The TCS shall transmit and post to the BOS database available for reporting Financial, Traffic and Event Transactions in near-real-time between the Roadside System and the BOS. Near-real-time for this requirement is defined as Transactions sent from the Roadside System to the BOS not less frequently than within four (4) hours.</p>	X																
	<p>Note: The Proposer shall describe in this Technical Response Form how it will integrate the Roadside System and the BOS to receive and process all Transactions</p>																	

Req ID	System Architecture (Section SA)	Required	Value Add						
	<p>in near-real-time in the TCS.</p> <p>Proposer Response:  Kapsch fully complies with requirement SA-021 , and this compliance is described below:  As shown in Figure 1-21 High-Level TCS Network Architecture with Clarifying Details in Section SA-049, the Kapsch Roadside system interfaces to the BOS through the Facility Host. Each of the toll zones will have redundant communication lines for direct transfer of all Financial, Traffic, and Event Transactions in near-real-time. This optimal configuration will maintain faster than near-real-time performance, with the ability to throttle transmission speeds during peak traffic times. Our system is designed to prioritize Event Transactions, allowing MOMS monitoring to occur in sub two-second transfer speeds. This prioritization allows potential problems in the system to be immediately identified and actions taken to avoid any downtime at all times and specifically during peak times.  Kapsch will provide redundant communication links to both the Downtown Equipment Pad and the East End Equipment Pad. These links will provide the necessary bandwidth to support the system operations in near-real-time. These will be fiber links supporting equal inbound and outbound data rates, and accommodating even higher rates when travel volumes justify the need for a different data plan. The initial data rate is sized to accommodate transfer of transactions and images to the Facility Host at the BOS site as soon as they become available and well within the 4 hour limit cited above. The Facility Host and the BOS are co-located and will be interconnected via high speed links internal to our Austin facility.</p> <p style="text-align: center;">Table 1-5 Outbound Data Bandwidth Requirements</p> <table border="1"> <thead> <tr> <th>Site</th> <th>Total Outbound Bandwidth (Mbps)</th> </tr> </thead> <tbody> <tr> <td>Aggregate for Downtown Toll Zones</td> <td>20 Mbps (physical limit of 50 Mbps)</td> </tr> <tr> <td>Aggregate for East End Toll Zones</td> <td>10 Mbps (physical limit of 50 Mbps)</td> </tr> </tbody> </table> <p>Kapsch recently provided the entire network solution for the LBJ and NTE projects in Dallas, TX. As a similar system in bandwidth needs, Kapsch is providing dual independent communication lines, from different service providers, with anticipated overhead for future needs.</p>	Site	Total Outbound Bandwidth (Mbps)	Aggregate for Downtown Toll Zones	20 Mbps (physical limit of 50 Mbps)	Aggregate for East End Toll Zones	10 Mbps (physical limit of 50 Mbps)		
Site	Total Outbound Bandwidth (Mbps)								
Aggregate for Downtown Toll Zones	20 Mbps (physical limit of 50 Mbps)								
Aggregate for East End Toll Zones	10 Mbps (physical limit of 50 Mbps)								
SA-022	<p>The Toll System Provider shall integrate all Transponder lists and Toll Rate Schedules in the TCS such that the BOS has a record copy of the Transponder list and corresponding Toll Rate Schedules for the time of the Traffic Transactions.</p>	X							
	<p>Proposer Response:  Kapsch complies with requirement SA-022 , and this compliance is described below:  The Facility Host accepts Transponder Status Lists from both the Joint Board and the IAG agencies, and integrates them into a combined list that is pushed out within the TCS for internal use. In all cases exact time-stamped copies of the received and transferred lists are kept at the BOS so they can be consulted later to confirm what external information was available within each part of the TCS at any point in time.  The Back Office System supports the entry of toll rates by toll zone and start date/time into the system by authorized users with appropriate credentials, with full logging of what was changed, when it was changed, and by whom. The BOS provides this toll rate schedule to the Facility Host.  The Facility Host manages the download of default toll rates and active toll rates to each Changeable Message Sign location and also applies the correct toll rates to the Traffic Transactions before they are passed on to the Back Office System for billing, receipt of payments and financial reconciliation. Before applying a toll rate to a Traffic Transaction received from the lane, the Facility Host first verifies that that toll rate was being displayed at the associated Changeable Message Sign (CMS) locations long enough for all drivers to be aware of it. The Facility Host also stays in communication with each Changeable Message Sign location to confirm its continued correct operation. In the unlikely event of communication outage with the CMS site and subject to final ORB-specific business rules, the Facility Host will apply the most recent LSIORB approved default toll rate that it can confirm was downloaded to that CMS, provided that default toll rate is not greater than the planned toll rate. The Facility Host will keep a record of the precise time periods when use of a default toll rate was considered necessary, so that rated Traffic Transactions can be cross-checked against both the toll rate that was being displayed, and the toll rate that was deemed applicable at that time at any toll zone for any vehicle class.  Precise rules-based application of external information regarding transponder status and applicable toll rates will ensure that customers are correctly billed and can be assured of consistent and fair treatment during any subsequent interactions with Customer Service Representatives. The Back Office equipment, Facility Host</p>								

Req ID	System Architecture (Section SA)	Required	Value Add
	equipment and recommended field-proven business rules supplied by the Kapsch Team provide an excellent framework for the orderly introduction of tolling in the Louisville / Southern Indiana area.		
SA-023	The Toll System Provider shall provide full integration between the CSC and BOS, including but not limited to: association of all customer contacts with the customer account and association of detail regarding the customer contact with the customer account (for example, wrap codes, email, letters, lockbox operations, and ad-hoc authorized user entered information).	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement SA-023 , and this compliance is described below:  All customer data (customer information, account access information, transaction information, etc.) are maintained in one master database. This allows the system to provide any associated information for the customer, including how the customer contacted (or was contacted by) the CSC, who accessed the customer information, contact notes, list of correspondence (e-mail, letters, payments made, transactions recorded) in the account.  This comprehensive information is what allows the call center staff to provide excellent, first-person service to the customer. All interactions are known and available for reference, customer information can be updated immediately, and the customer history is available to help research potential issues. The system supports the goal of “one-touch resolution”, so that follow-up calls are reduced.</p>		
SA-024	The TCS shall provide graphical user interface (GUI) based applications that shall accommodate any authorized device connected to the System and application based on access roles and security levels.	X	
	<p>Note: The Proposer shall provide in this Technical Response Form a list of all TCS applications that do not have a GUI.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement SA-024 , and this compliance is described below:  All Kapsch applications which have GUIs and will be available to authorized users if the device they are using is authorized and connected to the system. Our applications will provide the Joint Board with ease of operations and maintenance, for example our LBJ/NTE project uses our GUI based applications and has provided our client with a more efficient system. The list below shows roadside applications that run as background software services which do not require a GUI; however their activity is captured via logs or via MOMS SNMP traps:</p> <ul style="list-style-type: none"> <li>• Idris driver</li> <li>• Camera drivers</li> <li>• Reader drivers</li> <li>• SICK laser driver</li> <li>• SNMP Agent</li> <li>• Transaction Creation</li> <li>• Data cleanup and archival</li> <li>• TZC databases</li> </ul>		
SA-025	For any systems accessible by a commercial internet browser, the Toll System Provider shall provide secure browser-based system access and navigation for internal users and role-based access for external users using the latest version and the previous version of a web browser approved by the Joint Board. Acceptable web browsers include, but are not limited to the following: Microsoft's Internet Explorer, Mozilla Firefox, Google Chrome, Apple Safari iOS.	X	
	<p>Note: The Proposer shall describe the supported browser versions in its Technical Response Form.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement SA-025 , and this compliance is described below:  Kapsch shall provide a system which supports the use of the following browsers: Internet Explorer (9.0 and above), Firefox (latest and previous major versions), Chrome (latest and previous major versions), and Apple Safari iOS (latest and previous major versions).  The support of multiple browsers provides the ability to work with a wide range of equipment. This benefit will allow the agency to change desktop/laptop systems as</p>		



Req ID	System Architecture (Section SA)	Required	Value Add
	needed – and helps support a broader range of end-customer users who will use a variety of browsers and equipment to access the system via the customer website. In addition, support of the latest browsers ensures that the security protocols are up-to-date, and will protect the toll systems.		
SA-026	The Toll System Provider shall provide secure browser-based access and navigation of the Customer Website for Project customers using the latest version and the previous version of a web browser approved by the Joint Board. Acceptable web browsers include, but are not limited to the following: Microsoft Internet Explorer, Mozilla Firefox, Google Chrome, Apple Safari iOS.	X	
	Proposer Response: Kapsch fully complies with requirement SA-026 , and this compliance is described below: As stated in the response to requirement SA-025, the systems being provided will support the most recent major versions of the four major browsers on the market, at the time of system acceptance. The support of multiple browsers provides the ability to work with a wide range of equipment. This benefit will allow LSIORB to change desktop/laptop systems as needed -- and helps support a broader range of end-customer users who will use a variety of browsers and equipment to access the system via the customer website. In addition, support of the latest browsers ensures that the security protocols are up-to-date, and will protect the toll systems.		
SA-027	The TCS shall provide the following regarding web navigation: 1) self-service navigation that is optimized for speed regardless of the web browser used; 2) the capability to detect and report errors if the browser used to access the Customer Website is outdated or not supported; and 3) paginate content in various ways corresponding to differences in device characteristics.	X	
	Proposer Response: Kapsch fully complies with requirement SA-027 , and this compliance is described below: The Customer Website is based on a responsive design. It will detect the access type (web browser, or mobile device) and adjust the display accordingly. In addition, it will detect the type (and version) of browser used to access the website, and provide a warning to users when access is being attempted by an unsupported browser or a browser that is out of date. The benefit of the responsive design, and its additional browser detection, is to ensure that the customer has a satisfactory web experience, regardless of the device being used, and that any potential security issues are prevented.		
SA-028	The Customer Website shall be 1) accessible to mobile devices irrespective of differences in presentation capabilities and access mechanism; and 2) accessible on a range of mobile devices, including but not limited to: smart phones and tablets.	X	
	Proposer Response: Kapsch fully complies with requirement SA-028 , and this compliance is described below: As stated in the response to requirement SA-027 above: The Customer Website is based on a responsive design. It will detect the access type (web browser, or mobile device) and adjust the display accordingly. In addition, it will detect the type (and version) of browser used to access the website, and provide a warning when access is being attempted by an unsupported browser or a browser that is out of date.		

Req ID System Architecture (Section SA)

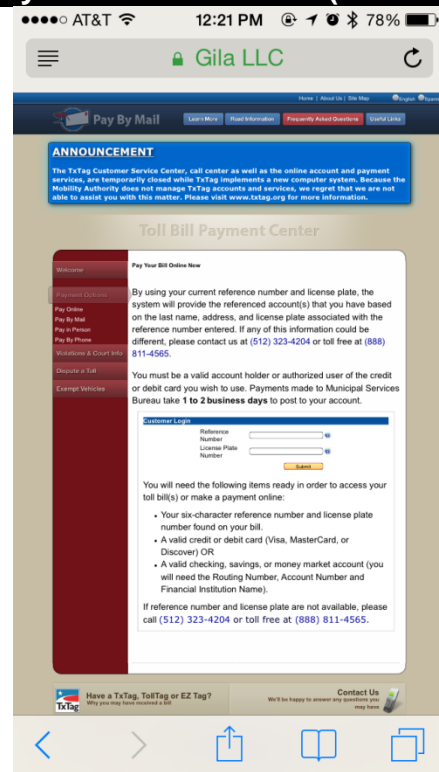


Figure 1-14 Mobile Website via iPhone (Example)

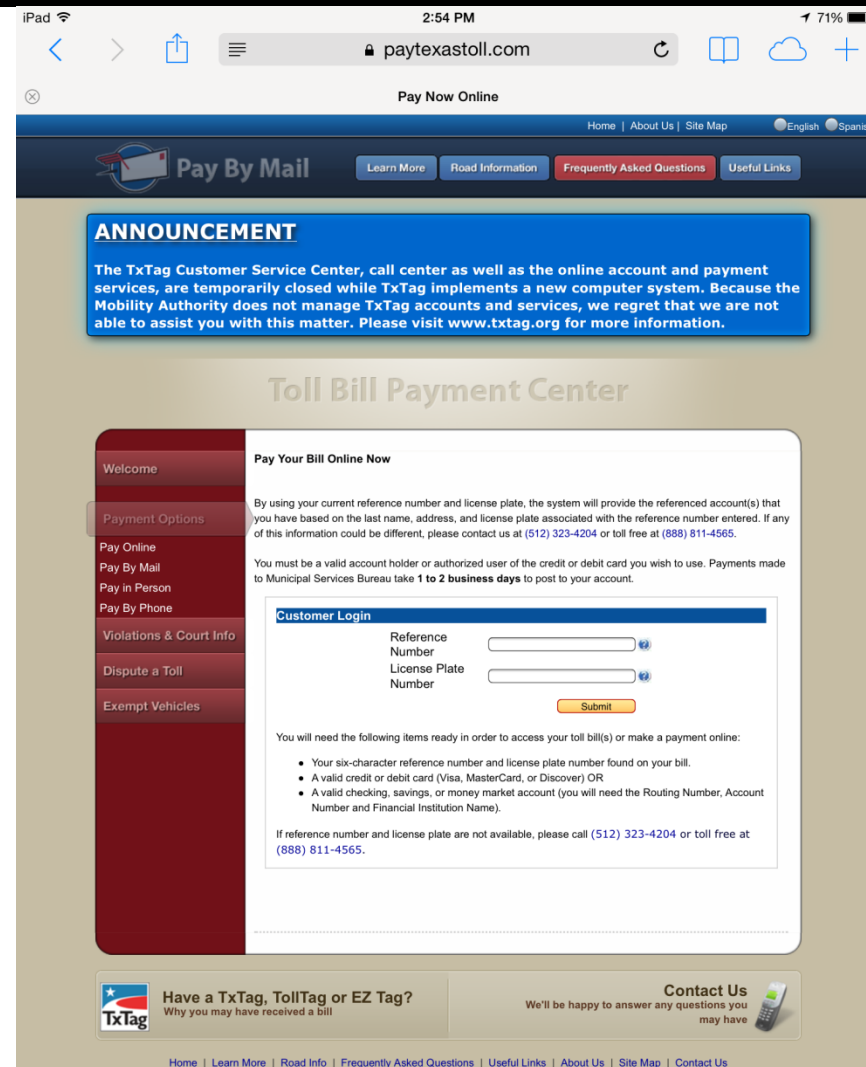


Figure 1-15 Mobile Website via iPad [English] (Example)

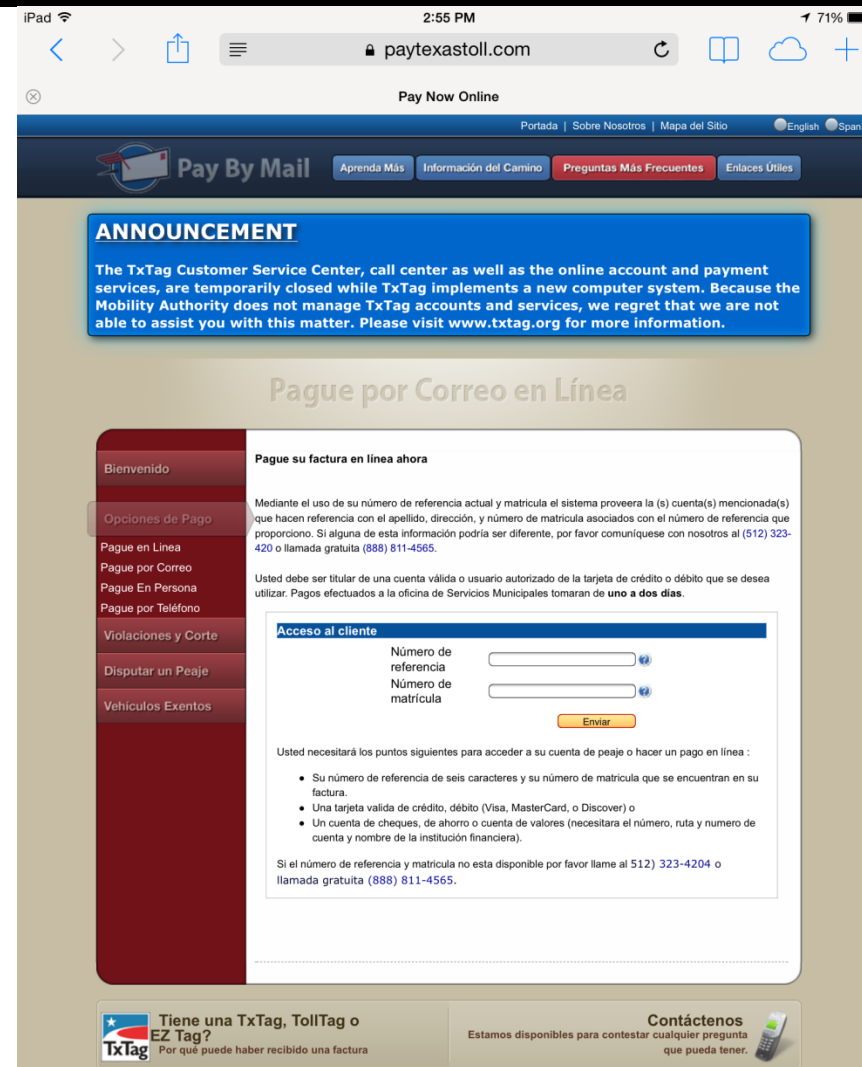


Figure 1-16 Mobile Website via iPad [Spanish] (Example)

The benefit of the responsive design, and its additional browser detection, is to ensure that the customer has a satisfactory web experience, and that any potential security issues are prevented.

SA-029

The TCS Customer Website shall support the latest versions of mobile operating systems, including but not limited to: Apple's Safari iOS, Android operating system, Windows operating system, BlackBerry operating system

X

Note: The Proposer shall describe the supported versions in its response.

Proposer Response:

Kapsch fully complies with requirement SA-029 , and this compliance is described below:

As stated in response to requirements SA-027 and SA-028 above, the Customer Website is based on a responsive design and it will detect the access type (web browser, or mobile device) and adjust the display accordingly.

Mobile users will be directed, automatically, to the appropriate web page which will display through the browser on their mobile device. This means that a user with an iPad/iPhone (IOS 7.x), Android device (OS 4.x), Windows device (Windows 8.x), or Blackberry device (6.x) will be able to access and use the website.

Req ID	System Architecture (Section SA)	Required	Value Add
SA-030	Any original Financial Transaction, Traffic Transaction or Event Transactions entered in the System shall only be modified in the System or deleted as necessary to move Transactions to long term storage in accordance with the archive requirements. Any updates to the data associated with any message shall be traceable to the original records. The TCS shall also identify the user that made the original record and any users that update original records.	X	
	<p>Proposer Response:</p> <p>Kapsch complies with requirement SA-030 , and this compliance is described below:            By design all original Financial Transactions, Traffic Transactions and Event Transactions are retained within the system unaltered. Any updates occur in ancillary records and are separately logged and auditable from original iteration through any amendments or modifications. All original data is retained in the Roadside System (RS) and Host system.            Kapsch practice is to append additional information to original Traffic Transactions as they proceed through the Facility Host and are handed off to the Back Office and Image Processing operations, without altering the original information that was automatically created within the toll zone. Kapsch practice is to have Event Transactions routed through the Maintenance and Online Management System (MOMS) with no alteration of the original data that triggered the event. Operations and Maintenance personnel are permitted to add additional information in order to schedule and complete preventative or corrective maintenance, but are not permitted to modify or delete its original contents. These additions are fully traceable to determine who made the addition and when – while still providing direct immediate access to the original information.            The Kapsch methodology described above is already in place within the Kapsch' Facility Host for the LBJ expressway in Dallas and will remain in place for the deployment at LSIORB.</p>		
SA-031	Any manual intervention required shall be only by authorized users and a full audit trail of such manual intervention shall be provided with appended records within the TCS.	X	
	<p>Proposer Response:</p> <p>Kapsch complies with requirement SA-031 , and this compliance is described below:            Kapsch shall provide a TCS which permits additions to Traffic Transactions and Event Transactions to be made ONLY at the BOS and NOT within the toll zone. Within the BOS, the ability to make those additions shall be restricted to personnel who have been given the access credentials necessary to perform that change. Additions to Traffic Transactions and Event Transactions can only be made at the BOS and not within the toll zone. Within the BOS, the ability to make those additions is restricted to personnel who have been given the access credentials needed to perform that change, and details are captured during any such changes in order to document when the change occurred and who made the change. No transactions can be deleted from either at the Toll Zone, the Facility Host, or the BOS.</p>		
SA-032	All confidential data (e.g. passwords, authorized user names and access rights) and Personally Identifiable Information shall be encrypted at a level of PCI commensurate with the size of their organization.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement SA-032 , and this compliance is described below:            The BOS/CSC/TCS is implemented so that all passwords, credit card numbers, and specific personal identification information are encrypted and protected within the database. In addition, this information is only viewable by personnel with the proper access-level and user controls. Credit card information is NEVER available in plain text for viewing once it has been entered into the system.</p>		
SA-033	The TCS shall provide access privileges for different levels of user authorization which shall be fully configurable by a System administrator.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement SA-033 , and this compliance is described below:            All access to the Toll Collection System by users is controlled by a single control point using the Active Directory database at the hosted Back Office. This includes access by TCS staff members that are located at the hosted BOS site, at the TOC site and at the two Walk Up Centers. It also includes users at retail outlets and remote user monitoring CCTV feeds and performing audit functions, regardless of where they are located. LDAP is used to permit other parts of the TCS to make decisions about user access based on the rights and privileges assigned to the user in the TCS's single access control point at the hosted Back Office.            In order to access the TCS Host and MOMS web applications. All users will be required to login using an ID and password. User profiles will specify which roadway data, system functionality, and reports they will have access to will be based upon on their user rights. Initial Permissions are granted based on assigned user group.</p>		

Req ID	System Architecture (Section SA)	Required	Value Add
	<p>Each user's access rights can be further customized. Upon login, a user's credentials are authenticated against MS Active Directory, which are then used by MOMS as needed. This granularity can extend down to read only access for all system screens</p> <p>The TCS Host and MOMS will display only the data a user has access to. The system will dynamically display the available functionality on both the screens and reports that are available to be accessed. User access and user group assignments can be made only by system administrator level personnel.</p>		
	<b>System and user configurable parameters</b>		
SA-034	It is desired that the TCS shall have access levels and user roles of the entire TCS controlled solely through a graphical user interface.		X
	<p>Proposer Response:  <b><i>K Kapsch implements Value-Add SA-034, and this compliance is described below:</i></b>  The TCS Host and MOMs shall have access levels and user roles which are controlled through a web-based graphical user Interface (GUI). All TCS Host and MOMS system access is controlled through a web based graphical user interface. Samples of this UI are shown below.</p> <div> </div> <p style="text-align: center;">Figure 1-17 System User List</p> <div> </div> <p style="text-align: center;">Figure 1-18 System User Details</p>		
SA-035	The TCS shall provide the functionality to create, manage, store and automatically transmit the then-current Toll Rate Schedules (including toll rate schedules for special events), per Toll Zone, by authorized users. The TCS shall create an audit trail that logs when the rates were configured, the user making the change in the System and the time at which the rates were effective.	X	
	<p>Proposer Response:  <b><i>Kapsch complies with requirement SA-035 , and this compliance is described below:</i></b>  The TCS Facility Host provides the functionality for authorized users to create, manage, store and automatically transmit the current Toll Rate Schedules per Toll Zone or across the system, as selected. The TCS Facility Host creates an audit trail that logs when the rates were configured, the user making the change in the System and the time at which the rates are to take effect. This functionality will also permit authorized users to record a start and end date/time per toll zone when a special event toll price is to be applied instead. A full permanent audit trail is maintained within the database and a record of all Toll Rate Schedules, and changes to them, will be maintained in this audit trail.</p> <p>As discussed in SA-020 above, the TCS Facility Host also captures additional information on the confirmed time of schedule roll-out to each Changeable Message</p>		

Req ID	System Architecture (Section SA)	Required	Value Add
	<p>Sign (CMS), the time at which it first began being applied to Traffic Transactions, and the start and end times for events that could cause the TCS Host to apply a lower default rate instead if so mandated by ORB-specific business rules.</p> <p>Note, that although manual entry by authorized users is required for the initial deployment at LSIORB, Kapsch will make the data base structure and database access constraints available to ORB to provide the foundation for the ICD required for any future interface to a separate Kapsch or third-party congestion pricing module.</p> <p>Kapsch has experience providing pricing solutions as part of toll collection systems it has installed within Austria, Australia, South Africa, Poland and the Czech Republic.</p>		
SA-036	<p>The TCS shall provide a default rate table for all Toll Zones when no Toll Rate Schedules can be found. The toll rate values in the default rate table shall be approved by the Joint Board.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch complies with requirement SA-036 , and this compliance is described below:</p> <p>A portion of the TCS Toll Rate Schedule Application includes the ability to enter a default rate table. This default rate table maintains a full audit trail within the entire Toll Rate Schedule application. The default toll rate table is subject to prior approval by the Joint Board.</p> <p>Subject to confirmation in LSIORB-specific business rules, it is recommended that this default toll rate table also be immediately downloaded to each Changeable Message Sign (CMS) and that it become the rate table presumed applicable, by both the CMS and by the TCS pricing application, if the link between the CMS and the rest of TCS is ever interrupted. Any Traffic Transactions affected by such an interruption would be flagged as such, for use in reporting statistics and for ease of confirmation during any related customer service interaction. It is anticipated that in some cases the default toll rate table will be no different than the current toll rate table for that toll zone.</p> <p>This approach is consistent with the toll display methodology used by Kapsch for its deployed toll collection system on the LBJ expressway in the Dallas area.</p>		
SA-037	<p>The TCS shall provide storage capacity thresholds which shall trigger alarm messages to be generated by and logged into MOMS. These thresholds shall be configurable between 0% and 100%.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement SA-037 , and this compliance is described below:</p> <p>The Kapsch solution includes a robust MOMS that incorporates SNMP traps and other monitoring facilities. The storage systems are able to transmit their storage limits and space available using the SNMP messages. MOMS monitors these messages, and upon receipt of messages indicating a certain configurable threshold is met, alarms and work orders are created to address the storage issue wherever it might be in the system. The MOMS can be configured to the limits designated by the Joint Board, between 0% and 100%. The MOMS allows operations to monitor this statistic, and expand storage in devices that are reaching thresholds where it was not originally anticipated. The preventative maintenance aspects of the MOMS will be used to optimize the storage solutions throughout the TCS.</p>		
SA-038	<p>The TCS shall be configurable based upon a confidence rating for video image processing transactions.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement SA-038 , and this compliance is described below:</p> <p>The TCS provided in this system is based on existing technology and solutions, successfully deployed in thousands of lanes throughout the world. As part of the solution, confidence levels on the OCR result of the video images are produced at the Toll Zone as part of the initial Traffic Transaction creation. The confidence system (OCR engine) used in the Roadside System is different than the OCR engine in the BOS. By incorporating two independent engines analyzing each image, the combined result of the two analyses further increases the confidence level for the overall OCR result. The Kapsch VR-X camera solution is designed to take high-quality images, which provide human readable license plate capture on above 99% of all images taken and over 99% of images where the license plate is properly placed, and not obstructed, bent, damaged in some other way.</p> <p>Once images are analyzed at the lane, transferred to the BOS, and analyzed again an overall confidence level is assigned to the Traffic Transaction OCR result. Operationally, the higher the confidence level the more automated image review can become. This operational savings translates directly into time necessary to process the images in the system. Through extensive video review experience, our systems are designed to complete the image review in the most economical manner to the satisfaction of our customers. In the initial system performance reviews, an optimal confidence level will be proposed to the Joint Board for review.</p>		

Req ID	System Architecture (Section SA)	Required	Value Add
	<p>The ultimate confidence levels will be configured in the system to optimize operations.</p> <p>The system is based on a scoring methodology where review results are scored based on configurable values in the system. A threshold is set based on the desired quality level and cost of processing the transaction. Higher thresholds result in higher quality, but require more matching results to pass the transaction. Our workflow is a double-blind configuration where two results must match for the transaction to progress. These results can come from two humans, human and OCR, or two independent high confidence reads from different OCR engines. The system also can utilize historical results to improve confidence of reads. If license plates have multiple transactions which have been identified prior, the system can be configured to raise the confidence of a matching read. This also reduces the amount of manual effort needed. A typical workflow of this process is show in WF-005, Figure 10-13.</p> <p>All manual review agents can have independent scoring based on configuration. For example, new trainees may be set initially at an 80% confidence level where veterans may be set at 98%. OCR engines can be configured at specified confidence levels depending on engine training to certain characteristics of the license plate.</p>		
SA-039	<p>The Toll System Provider shall provide a TCS with a disaster recovery system including facilities, Hardware, and Software that will ensure that the TCS continuously meets all availability performance guarantees set forth in TR Section PR. The TCS shall allow for continued use of the CSC, Roadside System and BOS in degraded mode whenever necessary.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement SA-039 , and this compliance is described below:</p> <p><b>Roadside System</b></p> <p>The Roadside System is built with redundancy in mind for equipment on the gantry and equipment in the Toll Zone Cabinets. The Toll Zones operate independently from each other and a disaster affecting one Toll Zone will not affect another, outside of a force majeure event. The Kapsch approach is consistent with keeping all operations running whenever possible so that availability requirements will be met. The proposed system for LSIORB is robust and can accommodate unexpected events while continuing to maintain operations and data collection. SA-003 provides additional discussion about the redundancy features within the Kapsch Roadside System (RS).</p> <p><b>Back Office and Customer Service Center</b></p> <p>The TCS is built on the foundational system provided by Software House International (SHI) for a secure managed private cloud platform. This platform currently hosts our entire BOS production environment and has a redundant back-up facility that is fully equipped to accommodate the full workload at service level agreement production performance levels in the event a disaster incapacitates the primary facility. In addition, the back-up facility is fully replicated to a third site that has the capability to restore service within a four-hour SLA between the BOS and SHI.</p> <p>The Back Office System (BOS) is comprised of VMWare 5.5 environment running on HP Blade servers in a C7000 HP Blade Center attached via redundant 8 GB fiber channel switch fabric to a HP EVA P6500. Software environment is an instance of Debt Manager 9 (formerly CRS Titanium) with a custom hybrid front-end programmed in the Salesforce environment. Databases utilized are a combination of Microsoft SQL 2008 and Oracle/SAP Hana on the Salesforce side.</p> <p><b>Disaster recovery site</b></p> <p>Complete redundant replication of the production environment, application, storage, VMware environment, network and backups. Housed in a tier 4 datacenter providing a 99.999 uptime statistic. Replication of the production environment is accomplished via MPLS circuit. Failover is automated by IP any cast running on F5 global traffic directors.</p> <p>The Kapsch Team’s proposed primary datacenter is located in Austin, Texas, with daily back-ups to a recovery site in Somerset, New Jersey and a disaster recovery (secondary site) facility located in Las Vegas, Nevada -- approximately 1,300 miles apart – providing a geographic separation distance fully consistent with industry best practices.</p> <p>In the event of a declaration of disaster, it has the capability to switch-over to the back-up facility within minutes of initiating a manual fail-over. Partial or complete failover can be automatically or manually initiated depending on the magnitude of the disaster or outage. Note that the Roadside System (RS) is designed to operate in a stand-alone mode until the BOS secondary site is operational, ensuring that all transactions continue to be captured and will be processed when normal operations resume</p> <p>Kapsch’s datacenter space planned for LSIORB is a hosted environment, set up with communications that far exceeds LSIORB’s current and future needs. The facility’s overall layout and design, leverages both industry best practices and solid experience to deliver a truly world-class system and operational support</p>		

Kapsch supports an **always-on, always-available** toll system and operational readiness, employing maintenance staff that shall provide system maintenance around the clock, 365 days a year.

Req ID	System Architecture (Section SA)	Required	Value Add
	<p>environment. Kapsch supports an always-on, always-available toll systems support environment providing the highest levels of uptime and operational readiness, employing maintenance staff that provides system maintenance around the clock, 365 days a year.</p>		
SA-040	<p>The TCS shall recover all Mission Critical Systems of the TCS within 4 hours of the time of failure. The TCS shall recover all Business Critical Systems of the TCS within 8 hours of the time of failure.</p>	X	
	<p>Note: The Proposer shall provide in this Technical Response Form the existing Disaster Recovery System Plan for the TCS which includes a list and description of all Mission Critical Systems and Business Critical Systems and operational steps to make each system operational.</p> <p>Proposer Response: Kapsch complies with requirement SA-040 , and this compliance is described below: Kapsch has wide-ranging and extensive experience in Business Continuity Management and Disaster Recovery. Our plans are targeted at ensuring the ongoing business operation in the event of a major incident. Kapsch has an experienced Business Continuity Management team, augmented as necessary with a 'virtual team' of experts who are available to provide specific technical and business skills. The team members are experienced in providing business continuity support and services in the automated toll collection sector and will work closely on the LSIORB program to provide a tailored Disaster Recovery System Plan that sustains Business Continuity. Kapsch Business Continuity approach is formulated from ISO 22301 guidelines and the methodology described below to affords protection to the entire business environment. Comprehensive Business Continuity Plans supported by sound Recovery and Reconstitution Capability are an integral part of the Kapsch solution. Both Kapsch and MSB internal Business Continuity Plans are, by their nature, company confidential documents. The specific Business Continuity Plans for the LSIORB Project are developed in conjunction with the Joint Board. Kapsch fundamentally builds resilience and redundancy into elements of the information and communications technology infrastructure that are critical to key business activities. This approach complements business continuity management and information management initiatives, which ensure that the plans produced provide clear policy directives and detailed procedures for successful disaster recovery and business continuity. The Business Continuity Management (BCM) methodology described here is comprehensive and aims to ensure that service can continue in the event of any unplanned interruption. BCM is service-driven, not technology-driven. Effective BCM capability must be embedded into the 'business as usual' procedures of the organization and is strategically designed, implemented and managed. In addition to Disaster Recovery requirements, our strategy addresses all elements of the provision of service and will ensure that the plans developed integrate across all Business and IT Recovery Plans. Our approach ensures that all interfaces with both internal and external organizations are examined to establish the impacts that an incident may cause. Kapsch addresses those impacts through discussion and review with the LSIORB Joint Board to ensure that, where relevant and appropriate, and recovery strategy and Business Continuity Plans are consistent and integrated. The goal is to fully utilize available resources and maximize efficiency during the recovery phase following an incident.</p>		

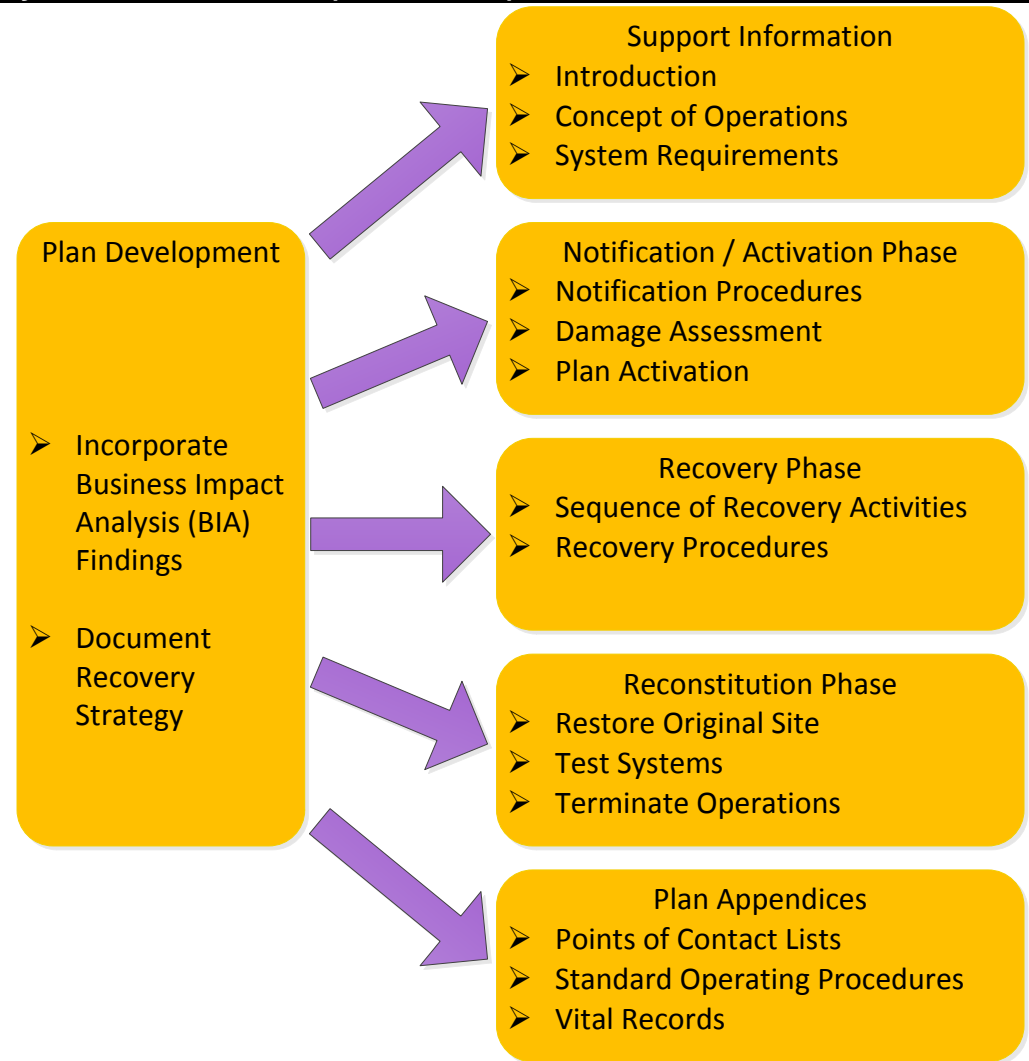


Figure 1-19 Kapsch Disaster Recovery Plan Development

In order to ensure that the required Disaster Recovery (DR) solution and Business Continuity Plans are developed and produced in accordance with the LSIORB Joint Board service level requirements, a Business Impact Analysis and Risk Assessment will be undertaken of the Systems, and Service(s) provided during the project planning phase.

The Business Impact Analysis will assist in the development of a detailed technical recovery Disaster Recovery solution and will provide conclusions and recommendations to feed into the developed documentation.

The initial stage of the Business Impact Analysis will establish the level of impact to the delivery of the Service(s) by examining various impact areas. These include:

- Unavailability over a number of varying timeframes;
- Destruction of the data, both partial and total, including backups;
- Unauthorized Disclosure of the information being processed;
- Modification of the data, whether accidental or deliberate;
- Communications interference impacts, such as misrouting, repudiation, etc.

A Risk Assessment will take into consideration all threats that could impact on the delivery of the Service(s). The high-level categories of threats that considered are:

- Logical Threats – such as Masquerading if User Identity, Unauthorized use of applications, etc.;
- Communications related threats – including Communications Infiltration and Manipulation;
- Technical Failures of Equipment – for example, Controllers, Components, Servers, Communications Devices, Data Storage devices, etc.;
- Environmental Control Failures – this includes Power and Air Conditioning;
- Software Failure – this covers both application and system or network software failure;
- Errors by People – such as User Error, Maintenance Errors and Operations Errors;
- Physical Threats – this includes threats such as Fire, Water damage, Theft, etc.

The risk assessment will also establish the level of vulnerability that the Service(s) has to the identified threats, will then assist in identifying relevant and appropriate countermeasures that will reduce the level of threat and vulnerability, minimize the impacts, assist in the detection and facilitate recovery.

The results of the risk assessment will assist in identifying the priorities for recovery. This supports the LSIORB Joint Board’s requirement that all Mission Critical Systems of the TCS be recovered within 4 hours of the time of failure and all Business Critical Systems of the TCS within 8 hours of the time of failure.

It will also identify:

- possible single points of failure;
- data/hardware dependencies;
- infrastructure/facilities dependencies;
- recovery requirements for input to the various business continuity plans;
- acceptable time frames for recovery of the Service(s);
- suitable Disaster Recovery strategies for the Service(s).



Req ID	System Architecture (Section SA)	Required	Value Add
	<p>From the results of these analyses, Kapsch, in consultation with LSIORB Joint Board, will also determine the resources required to recover the end-to-end-service within the stated time frames. Once the LSIORB Joint Board accepts the results of the Business Impact Analysis and Risk Assessment, teams will begin forming the Recovery and Reconstitute Strategy.</p> <p>Based on the results of the Business Impact Analysis and Risk Assessment and the Recovery Requirements Review, Kapsch will develop a recovery and reconstitute strategy for discussion with LSIORB Joint Board.</p> <p>The review will include elements such as:</p> <ul style="list-style-type: none"> <li>• Agreeing on initial recovery priorities and objectives with the LSIORB Joint Board;</li> <li>• Assessment of the technical infrastructure required to support agreed upon recovery objectives;</li> <li>• Review and development of recovery scripts and procedures;</li> <li>• Data back-up strategy for inclusion in Backup Plan;</li> <li>• Potential alternative workplaces for staff;</li> <li>• People;</li> <li>• PR &amp; communication;</li> <li>• Facilities;</li> <li>• Equipment;</li> <li>• IT and data &amp; voice networks; and</li> <li>• Vital records (paper and electronic).</li> </ul> <p>Once the strategy has been developed and accepted by the Joint Board, Kapsch will develop a Notification and Activation strategy for inclusion in the Plan. It is essential that the strategy developed is integrated to facilitate the appropriate level of response to the various incidents that could impact the delivery of Service. The Notification strategy supports the next phase of execution for the recovery and reconstitute strategy. This phase deals with documenting the steps necessary for recovery, identified by the Business Impact and Risk Assessment. Further, how they are executed in the recovery or reconstitute situation.</p> <p>Kapsch will work with LSIORB to develop comprehensive Business Continuity Plans that will cover:</p> <ul style="list-style-type: none"> <li>• Crisis management, based on the 'Command and Control' structure used by the emergency services.</li> <li>• Initial response;</li> <li>• Invocation procedures;</li> <li>• Definition of responsibilities;</li> <li>• Business recovery procedures; and</li> <li>• Technical recovery scripts;</li> <li>• Technical reconstitution procedures in the event of total loss.</li> </ul> <p>Kapsch will ensure that its Business Continuity Plan is consistent with the LSIORB Joint Board Crisis/Communications Management Plan. The recovery strategy will include the following:</p> <ul style="list-style-type: none"> <li>• The definition of suitable DR and Business Continuity organizational structures to ensure close co-operation, liaison and synergy;</li> <li>• The implementation of the agreed DR and Business Continuity fallback and standby arrangements, ensuring that contracts for the provision of support services meet the required service level requirements and are cost-effective;</li> <li>• The development of the necessary Business Continuity and DR plans to ensure consistency of approach, content and integration with other plans (i.e. other business units, organizations, suppliers, LSIORB Joint Board, etc.);</li> <li>• The implementation of any risk reduction measures determined as an integral part of the Business Impact and Risk Assessment phase;</li> <li>• The development of documented procedures;</li> <li>• The initial testing of the plans developed. Testing will provide a degree of confidence that the plans are workable and address all the required aspects for business continuity and DR.</li> </ul>		

Req ID	System Architecture (Section SA)	Required	Value Add
	<p>Effective testing is then carried out using a variety of techniques to ensure that the Disaster Recovery Plans are viable and will support the recovery requirements within the timeframe specified.</p> <p>Plans include the definition of a technical recovery testing strategy to ensure that regular recovery testing is undertaken on a regular basis. The Service Delivery Manager will ensure that both business changes, and changes to the technical infrastructure are identified and communicated to Joint Board as part of the normal reporting process, so that plans are updated accordingly.</p> <p>A number of different tests for both Business Continuity and DR plans may be conducted. These include:</p> <ul style="list-style-type: none"> <li>• <b>Data Center Walkthrough Test.</b> This is a walkthrough of the disaster recovery plan where basic recovery is tested to ensure that the plan covers all the required aspects, and the necessary system backups are available for recovery and a test of the restore procedures (if required).</li> <li>• <b>Roadside Component Testing.</b> This is similar to the above with the additional aspect of redundancy check on the component to ensure they function as expected. This is normally done prior to “go-live” so as not to affect the normal production environment;</li> <li>• As above, with the communications being tested for <b>switching/dynamic re-configuration connectivity</b>. Communications may have some impact on operations so is normally scheduled to be carried out prior to “go live” or at times scheduled and agreed with all affected parties, normally at periods of low or zero activity;</li> <li>• <b>Support Service Tests.</b> These are to ensure that line switching can be carried out within the required timescales with minimal or zero effect on the delivery of service. Again, these tests are normally carried out at times of minimal load so as to have zero or minimal impact on the service;</li> <li>• <b>Limited Business Unit Tests.</b> These types of tests normally are conducted with a single or small group of inter-related business functions to ensure that their systems recover within the required time frames. In addition, it ensures that the systems required to carry out the various activities of the functions involved are operating correctly, and the interfaces between them are operational. It also highlights any requirements for the forward recovery of data to ensure zero data loss as a result of the incident;</li> <li>• <b>Crisis Management Tests.</b> These tests are conducted to ensure that all members of the Notification and Activation Team (both Kapsch and LSIORB Joint Board) are familiar with their various roles and the business functions that they are responsible for and allows them to proceed through pre-defined scenarios ensuring that all aspects of the business have been addressed (i.e. People, Assets and Business Priorities).</li> </ul> <p>Continuous improvement is ensured by integration of the business continuity strategy into the Change Control process to ensure that Plans are kept up to date and continue to reflect any changes to the business.</p> <p>Finally, an integral part of maintaining continuous improvement is a strategy and programs for staff training and internal communications to ensure that all levels of staff are aware of their individual responsibilities in respect of business continuity. Through training seminars and scheduled program of plan tests, all members of staff involved in Disaster Recovery and Business Continuity will become familiar with their roles and responsibilities thereby ensuring that their response to an incident is conducted in a controlled manner.</p> <p>A more detailed description of each element of the Kapsch Business Continuity Management Methodology can be provided. By adopting this methodology, Kapsch and LSIORB Joint Board can be sure that effective Business Continuity capability is in place, based upon sound service-focused requirements.</p> <p>Kapsch considers the following systems or subsystems as <b>Mission Critical</b>:</p> <ul style="list-style-type: none"> <li>• <b>Tolling Zone Controller</b> – The TZC is designed for resiliency and redundancy;</li> <li>• <b>Facility Host</b> – The Facility Host is designed for resiliency and redundancy;</li> <li>• <b>Administration Functionality</b> – The back-office is designed for resiliency and redundancy.</li> </ul> <p>Kapsch considers the following systems or subsystems as <b>Business Critical</b>:</p> <ul style="list-style-type: none"> <li>• <b>Image Capture Subsystem</b> – The ALPR subsystem and roadside cameras are designed for resiliency and redundancy;</li> <li>• <b>Toll Sign Controller</b> – The Toll Collection System subsystems involving signs in the event of a failure will process a default rate for rating purposes. The system will process transactions as during normal operations;</li> <li>• <b>Toll Sign CCTV Camera</b> – Camera outages will reduce confidence in posted toll rates which could potentially impact customer service functions.</li> <li>• <b>ETC Subsystem</b> – The ETC subsystem is designed for resiliency and redundancy;</li> </ul>		

Req ID	System Architecture (Section SA)	Required	Value Add
	<ul style="list-style-type: none"> <li>• <b>DVAS Subsystem</b> – The DVAS system provides audit functionality and is considered business critical;</li> <li>• <b>CCTV Subsystem</b> – The CCTV subsystem provides audit functionality and is considered business critical;</li> <li>• <b>Vehicle Detection and Classification Subsystem</b> – The Vehicle Detection and Classification Subsystem is designed for resiliency and redundancy;</li> <li>• <b>OCR subsystem</b> – The OCR subsystem is designed for resiliency and redundancy;</li> <li>• <b>Communications</b> - The Communication System is designed for resiliency and redundancy;</li> <li>• <b>Maintenance Online Monitoring System</b> – The MOMS is designed for resiliency and redundancy;</li> <li>• <b>Customer Service</b> – These services are considered business critical and are back office server related;</li> <li>• <b>Invoicing</b> – These services are considered business critical and are back office server related;</li> <li>• <b>Payment Processing</b> – These services are considered business critical and are back office server related;</li> <li>• <b>Accounting</b> – These services are considered business critical and are back office server related;</li> <li>• <b>Data Warehouse</b> - These services are considered business critical and are back office server related;</li> <li>• <b>Transponder Management</b> - These services are considered business critical and are back office server related;</li> <li>• <b>Customer Web Services</b> - These services are considered business critical and are back office server related;</li> <li>• <b>External Interfaces</b> - These services are considered business critical and are back office server related;</li> </ul> <p>Disaster Recover System Plans will be revised and tailored further, and delivered for review and approval with 180 days after NTP, as described in TP-032.</p>		
SA-041	The Toll System Provider shall provide a disaster recovery site that shall be located at least 100 miles from all of the TCS Sites used for the Project.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement SA-041 , and this compliance is described below:  As stated above in Section SA-039, our primary datacenter is located in Austin, Texas and the disaster recovery (secondary site) facilities located in Las Vegas, Nevada-- approximately 1800 miles apart. Since 2013, this has been the disaster recovery site for our 600 clients in 38 states that are serviced on our platform. Kapsch will use the same standards for LSIORB disaster recovery as they do for LSIORB and all of our critical government contracts.</p>		
SA-042	The Toll System Provider Disaster Recovery System Plan shall ensure no data will be lost prior to, during and after a disaster.	X	
	<p>Note: The Proposer shall describe in this Technical Response Form how its' Disaster Recovery System Plan will prevent loss of any data in case of a disaster.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement SA-042 , and this compliance is described below:  Our business continuity approach is based on operational planning / procedures and systems designed to be fault tolerant. We include disaster recovery capabilities for major failures such as loss of the customer service center and primary facilities. . The plan will describe both system/technical capabilities as well as requirements for Kapsch team response.  As part our solution, we will provide a detailed System Disaster Recovery and Business Continuity plan. This will document all the steps necessary to recover from a disaster, and how the BOS, CSC, and Roadside will continue to operate during the disaster. The following is a high-level overview of the topics covered in the plan:</p> <ul style="list-style-type: none"> <li>• Disaster Risks &amp; Prevention</li> <li>• Disaster Recovery Planning</li> <li>• Documents &amp; Checklists</li> <li>• Secondary Production Facility</li> <li>• Replacement Equipment</li> <li>• Back-ups</li> <li>• Disaster Declaration &amp; Notification</li> </ul>		

Req ID	System Architecture (Section SA)	Required	Value Add
	<ul style="list-style-type: none"> <li>• Disaster Recovery Teams</li> <li>• Activation of Disaster Recovery Plan</li> <li>• Equipment Protection &amp; Salvage</li> <li>• Damage Assessment</li> <li>• Emergency Procurement Procedures</li> <li>• Failover &amp; Verification Procedures</li> <li>• Switchover Procedure</li> </ul>		
SA-043	<p>The Toll System Provider shall ensure that the application and use of the ETC Components complies with all applicable FCC regulations. The Toll System Provider shall secure a FCC site license for each Toll Zone on behalf of the Joint Board. The FCC site license shall be transferred to the Joint Board no later than 60 days after Revenue Service for each Bridge.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement SA-043 , and this compliance is described below:  The Kapsch MPR readers and antenna lane kits, being delivered under a separate contract, have been fully certified for FCC regulations 47 CFR 90 (e.g. Part 90) and 47 CFR 15 (e.g. Part 15).  Kapsch personnel will install these items at each LSIORB toll zone, tune them for optimum ETC detection performance, and will also implement any RF coordination measures needed between adjacent toll zones. Toll zones with three or fewer lanes/shoulders of up to 12 feet will use a single MPR reader unit. Those with more than three 12-foot lanes/shoulders will use multiple MPR readers, all synchronized to permit seamless operation of RF channels across the full multi-lane free-flow high speed toll plaza.  Kapsch will apply for an FCC site license for each of the MPR readers and will transfer those FCC licenses to the Joint Board no later than 60 days after the site goes into Revenue service. Kapsch has previously obtained FCC site licenses for MPR readers installed at the LBJ expressway in the Dallas area and will follow a similar process for obtaining FCC site-specific licensing on behalf of the Joint Board. Since there are no airports or railroads within 0.25 miles of any of the Downtown or East Side toll zones, obtaining a site license for ETC readers at those locations is expected to be routine.  Kapsch has 20 years' experience installing, tuning, coordinating, and obtaining FCC licensing, for ETC readers on over 3,700 lanes for the 25 agencies within the 15 states that form the E-ZPass Group. When it comes to E-ZPass and 6C ETC readers, there is no Toll System Provider more qualified than Kapsch to fully address the integration and licensing issues in a competent and time-efficient manner.</p>		
SA-044	<p>The Toll System Provider shall install, configure, tune, test, and integrate the ETC Components into the Roadside System and ensure that they are operational and meet all functional and Performance Requirements.</p>	X	
	<p>Note: The ETC Component includes all components in Exhibit L required by the Toll System Provider to operate the TCS at the Performance Requirements. The Joint Board has secured a Contract with the ETC Contractor to provide technical support as necessary during the Term of the Contract.</p> <p>Proposer Response:  Kapsch fully complies with requirement SA-044 , and this compliance is described below:  Toll collection via transponder technology is the most effective form of revenue collection within toll lanes. The high accuracy and reliability allow consistent identification of vehicles traveling on a roadway. Kapsch is one of the leading providers of this technology in the world and throughout the United States. Our systems have a reputation for delivering world-class ETC performance. The technology provided by Kapsch, as part of the ETC Component Contract, is the Kapsch MPR reader which incorporates all of the latest features of our proven technology platform. With this reader, the Joint Board will be able to take full advantage of the growing E-ZPass and 6C transponder populations.</p> <p><b>Installation, Configuration, Tuning, and Testing</b>  With Kapsch supplying the ETC Components, as part of a separate ETC Contract, the Joint Board will receive the most qualified team for installation, configuration, tuning, and testing. Our technicians are extremely familiar with installing readers in a variety of environments such as open roads and near bridges. This knowledge</p>		

Req ID	System Architecture (Section SA)	Required	Value Add
	<p>directly translates to having a properly installed ETC Subsystem. The configuration, tuning, and testing portion of the installation will be led by Senior Technicians who perform the configuration and tuning of readers around the country. Having multiple readers within the Toll Zone creates a situation which must be carefully addressed to mitigate any radio frequency (RF) interference. Every site is unique and radio waves react differently to the surrounding gantries and equipment in each location. Specific knowledge is critical to mitigate RF issues when tuning an ETC location. Kapsch brings this knowledge and experience to the Joint Board for this LSIORB project.</p> <p>The testing program will cover several layers of testing, from a component level, to the factory acceptance, and ultimately to the site acceptance testing at each of the final Toll Zone sites. During site acceptance testing, a set of vehicles, outfitted with approved transponders, will drive through the Toll Zone sites and ETC Transactions will be collected from those vehicles. Analysis will occur of the vehicle passages, and any fine-tuning of the ETC Zone will occur if needed to fully guarantee meeting all ETC performance standards. Kapsch will meet and exceed the ETC performance standards stated within this Technical Response.</p> <p>Some of the steps that go into properly installing and tuning a Toll Zone site include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Performs an RF survey at each toll zone.</li> <li>• Identify any background RF emitters</li> <li>• Determine optimal RF channels to use</li> <li>• Synchronization</li> <li>• Proper configuration of readers to permit efficient frequency re-use without loss in performance</li> <li>• Proper configuration to exchange intermediate data regarding tag reads</li> <li>• Allows correct detection and lane assignment across the full toll zone.</li> <li>• In cases where two toll zones are directly adjacent, such as EEC-1 (I-295 Northbound) and ECC-2 (I-295 Southbound) at the East End Crossing, a further level of synchronization will be implemented between the readers at the two different toll zones, if necessary.</li> <li>• Site Test Procedures</li> <li>• Static Tests: <ul style="list-style-type: none"> <li>• power levels</li> <li>• antenna tilt angles for each lane</li> </ul> </li> <li>• Dynamic Tests: <ul style="list-style-type: none"> <li>• Test Vehicles in each lane (and straddles) from 0 to 100 mph.</li> <li>• Tune for optimal communications for all scenarios</li> </ul> </li> </ul> <p><b>Remote Monitoring and Tuning</b></p> <p>Even after initial installation and commissioning, remote access to the Kapsch MPR readers such monitoring of channel-by-channel performance, allowing remote tuning. This remote connectivity and monitoring will be used by Kapsch personnel to determine when corrective or preventive maintenance is needed to keep ETC performance within the required performance band. The remote access capabilities of the MPR reader also permit minor adjustments to channel power levels such that lane closures for on-site maintenance operations are minimized. At all times the health of the ETC readers and channel electronics will be reported to the Maintenance and Online Management System (MOMS) using standard SNMP commands and messages.</p> <p><b>Buffering</b></p> <p>The Kapsch MPR reader has fully redundant processing capabilities, and will have redundant communication links to the Toll Zone Controller. If communication to the Toll Zone Controller is ever unavailable, each reader is able to buffer up-to 400,000 transactions and continue normal operations. Once communication is restored, all ETC transaction reads will transfer to the Toll Zone Controller for creation into Traffic Transactions.</p> <p><b>Impact of Roadside Systems Accuracy and Reliability on overall Toll Systems Performance</b></p> <p>Of all the roadside sensors used in Toll Collection Systems, the ETC component provides one of the highest levels of accuracy and reliability. This is a critical piece of the overall performance exploiting the ETC's inherent ability to detect and instantly identify, through the transponder ID number, the customer. This greatly lowers</p>		

Req ID	System Architecture (Section SA)	Required	Value Add																
	the risk of collecting tolls, and avoids the more process intensive tasks of image review and identification. Maximizing transponder use on a roadway is the key driver in lowering ongoing operations costs. Utilizing the Kapsch ETC components, for this functionality, is proven effective in maintaining the necessary high-performance and continual accuracy levels. Our Roadside Systems are built around our Kapsch Readers, and Kapsch has more knowledge than any other company in optimizing this subsystem's performance.																		
SA-045	<p>The Toll System Provider shall provide ICDs including an interface test plan in the Master Testing and Commissioning Plan ( see TR Section TP for plan requirements) for all single and two-way external interfaces including, but not limited to:</p> <table border="0"> <tr> <td>a) Interoperable agencies</td> <td>b) Transponder statuses</td> </tr> <tr> <td>c) Mobile devices</td> <td>d) Cash bank(s)</td> </tr> <tr> <td>e) Credit card payments</td> <td>f) Court(s)</td> </tr> <tr> <td>g) Collection agency(s)</td> <td>h) Walk-up Centers</td> </tr> <tr> <td>i) Traffic management center(s)</td> <td>j) Transponder management</td> </tr> <tr> <td>k) Retail outlets and kiosks</td> <td>l) Legal entities (for persons of interest)</td> </tr> <tr> <td>m) Mail address skip-tracing service</td> <td>n) Indiana and Kentucky DMV</td> </tr> <tr> <td colspan="2">o) Third party suppliers (e.g. out-of-state registered owner look-up) p) Financial management system</td> </tr> </table>	a) Interoperable agencies	b) Transponder statuses	c) Mobile devices	d) Cash bank(s)	e) Credit card payments	f) Court(s)	g) Collection agency(s)	h) Walk-up Centers	i) Traffic management center(s)	j) Transponder management	k) Retail outlets and kiosks	l) Legal entities (for persons of interest)	m) Mail address skip-tracing service	n) Indiana and Kentucky DMV	o) Third party suppliers (e.g. out-of-state registered owner look-up) p) Financial management system		X	
a) Interoperable agencies	b) Transponder statuses																		
c) Mobile devices	d) Cash bank(s)																		
e) Credit card payments	f) Court(s)																		
g) Collection agency(s)	h) Walk-up Centers																		
i) Traffic management center(s)	j) Transponder management																		
k) Retail outlets and kiosks	l) Legal entities (for persons of interest)																		
m) Mail address skip-tracing service	n) Indiana and Kentucky DMV																		
o) Third party suppliers (e.g. out-of-state registered owner look-up) p) Financial management system																			
	<p>Note: The Proposer shall provide a list of all ICD's in this Technical Response Form. All actual ICD's shall be included in the Master Testing and Commissioning Plan.</p> <p>Proposer Response:</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>																		

Req ID	System Architecture (Section SA)	Required	Value Add
[Redacted]	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		

Req ID	System Architecture (Section SA)	Required	Value Add
[Redacted]	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
[Redacted]			
[Redacted]			
[Redacted]			
[Redacted]			
[Redacted]			
[Redacted]			
[Redacted]			
[Redacted]			
[Redacted]			
[Redacted]			
[Redacted]			
[Redacted]			
[Redacted]			



Req ID	System Architecture (Section SA)	Required	Value Add
	<ul style="list-style-type: none"> <li>█ [REDACTED]</li> <li>█ [REDACTED]</li> <li>█ [REDACTED]</li> </ul> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>		
SA-046	<p>The ICD shall provide for a message level interface. It shall include protocols used in the interface, a brief concept of operations that describes how the messages are used, the related Business Rules and all networking and interface requirements including network diagrams. The ICDs shall include interface test procedures that describe all aspects of the interface testing and validation of each test requirement.</p>	X	
	<p>Note: The Proposer's response shall include a sample ICD for the Project.</p> <p>Proposer Response:</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <ul style="list-style-type: none"> <li>█ [REDACTED]</li> <li>█ [REDACTED]</li> <li>█ [REDACTED]</li> </ul> <p>[REDACTED]</p> <p>[REDACTED]</p> <ul style="list-style-type: none"> <li>█ [REDACTED]</li> </ul> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>		

Req ID	System Architecture (Section SA)	Required	Value Add

Req ID	System Architecture (Section SA)	Required	Value Add
[Redacted]	[Redacted]		

Req ID	System Architecture (Section SA)	Required	Value Add

Req ID	System Architecture (Section SA)	Required	Value Add

Req ID	System Architecture (Section SA)	Required	Value Add

Req ID	System Architecture (Section SA)	Required	Value Add

Req ID	System Architecture (Section SA)	Required	Value Add



Req ID	System Architecture (Section SA)	Required	Value Add

Req ID	System Architecture (Section SA)	Required	Value Add

Req ID	System Architecture (Section SA)	Required	Value Add
SA-047	The TCS shall generate files to transmit, receive and process information with multiple registered vehicle owner look-up service providers and DMVs via electronic interface portals provided by the Toll System Provider. It is desired that if the registered driver information is available in addition to the registered owner information, this information be provided by the Toll System Provider.	X	
	Note: The Proposer's response shall indicate the states with which the Proposer has an existing relationship and the costs associated with a look-up by state. Note: Registered driver information may be used in the case of lease or fleet vehicles.		

Req ID	System Architecture (Section SA)	Required	Value Add
	<p>Proposer Response:</p> <p>[Redacted]</p>		
SA-048	<p>The TCS shall generate reports that detail all interoperable Transactions sent and received from or to the interoperable agencies.</p>	X	
	<p>Proposer Response:</p> <p>[Redacted]</p> <ul style="list-style-type: none"> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> </ul>		
SA-049	<p>The Toll System Provider shall provide a fully functional TCS network from the Toll Zones to the BOS. The proposed architecture shall use an existing communications service provider to provide “last mile” infrastructure (e.g. conduits and cable) and network connectivity from the toll equipment pad to an existing fiber optic commercial network owned by a commercial carrier. The Toll System Provider shall contract with a local communications service provider to provide data communications, including all necessary fiber cables and network equipment, from the Toll Zones to the local data center to be approved by the Joint Board. The Toll System Provider shall provide connectivity from the Toll Zones to an existing commercial service and back to a local data center that supports multiple internet service providers. The Toll System Provider shall connect its BOS with other supported external services (e.g. Walk-up Center, lockbox, and retail distribution centers) using commercial internet service providers. The high level architecture is described in Attachment C-1 of the Technical Requirements. The Toll System Provider shall comply with the architecture specified in Attachment C-1 or an alternative architecture approved by the Joint Board in its sole discretion.</p>	X	
	<p>Note 1: If the architecture specified in SA-0049 and Attachment C-1 does not work with the Proposer’s system, the Proposer shall propose in this Technical Response Form an alternative approach and architecture.</p> <p>Note 2: The Proposer shall identify the Internet Service Provider that TSP expects to use to connect the proposed remotely located BOS to the Roadside System and local network hub, and the bandwidth requirement for 100,000 ADT Traffic Transactions including all images, video and data necessary to operate the TCS in this Technical Response Form. In Attachment C-1 this is identified as Segment 2 on the diagram.</p> <p>Note 3: The Proposer shall identify the bandwidth requirements for Segment 1, which is defined as the communications link between the Toll Zones and communication service provider data center, and Segment 2, which is defined as the communications link between communications service provider data center and the Proposer’s BOS in this Technical Response Form.</p>		

Req ID	System Architecture (Section SA)	Required	Value Add
	<p>Proposer Response:</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <ul style="list-style-type: none"> <li>[Redacted]</li> <li>[Redacted]</li> <li>[Redacted]</li> <li>[Redacted]</li> <li>[Redacted]</li> <li>[Redacted]</li> </ul>		

Req ID	System Architecture (Section SA)	Required	Value Add
	<div style="background-color: black; width: 100%; height: 100%; min-height: 600px;"></div>		

Req ID	System Architecture (Section SA)	Required	Value Add
	<p>[REDACTED]</p>		
SA-050	<p>The Toll System Provider shall manage and be responsible for all elements of the network communications in the TCS. The actual, direct costs charged by the data communications service provider to TSP shall be billed to the Joint Board as a "Pass-Through Cost Item" without any mark-up. The Toll System Provider shall manage the identification and repair of any communications outages. The Toll System Provider shall require a monthly report from the network communications service provider that will be distributed to the Joint Board in the Monthly Operations and Maintenance Report. The content of the reports and all service level requirements will be negotiated after contract award. The Toll System Provider shall contract directly with the communications service provider for a 3 to 5 year contract on terms and conditions approved by the Joint Board, in its sole discretion.</p>	X	
	<p>Proposer Response:</p> <p>[REDACTED]</p>		
SA-051	<p>The Toll System Provider shall provide, update and maintain a Data Mart for the TCS that shall be available to and accessible by the States' Parties at all times from and after six months prior to the first Tolling Readiness Deadline. The Data Mart shall include ETC and license plate transaction data and ETC and license plate</p>	X	

Req ID	System Architecture (Section SA)	Required	Value Add
	account data from the Roadside System, BOS and CSC in its native format and not aggregated to summary level data. The MOMS work orders and system tickets shall also be made available in the Data Mart. The purpose of this Data Mart is for the States' Parties to develop States' Parties' reports outside of the TCS. The data retention period for the Data Mart shall be one (1) year.		
	<p>Proposer Response:</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>		
SA-052	The Data Mart shall provide for the use of an Extract Transfer Load (ETL) with a full written data dictionary of the TCS data or a separate copy of the data to be replicated by the States' Parties for their own reporting.	X	
	<p>Note: States' Parties may retrieve this data using one methodology or two separate methodologies as described below. Alternative 1 is to provide a copy of the database management system for the States Parties to use the data within the Data Mart. Alternate 2 is the use of an Extract Transfer Load (ETL) tool. The Toll System Provider shall accommodate both methodologies of retrieving this data from a specified operational database within the TCS.</p> <p>Proposer Response:</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <ul style="list-style-type: none"> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> </ul> <p>[REDACTED]</p>		



Req ID	System Architecture (Section SA)	Required	Value Add
SA-053	<div style="background-color: black; width: 100%; height: 500px; min-height: 500px;"></div>		
	<p>[REDACTED]</p> <ul style="list-style-type: none"> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> </ul>		
SA-053	For the ETL method, the Toll System Provider shall provide all data available in the TCS to the ETL to be accessed by the States' Parties no less frequently than	X	

Req ID	System Architecture (Section SA)	Required	Value Add
	every 24 hours. The Proposer shall provide this capability no later than six (6) months prior to the first Tolling Readiness Deadline.		
	<p>Note: The Proposer shall identify in this Technical Response Form the maximum frequency that the data may be retrieved from the System.</p> <p>Proposer Response:  Kapsch fully complies with requirement SA-053 , and this compliance is described below:  Kapsch uses Microsoft SQL Server for hosting its operational database, enabling use to configure the update frequency by the second, minute, hour, day, or other parameter. Kapsch will configure the server to handle daily updates (every 24 hours), or more frequent if decided by the Joint Board.</p>		

**Roadside Requirements**

Req ID	Roadside Requirements (Section RS)	Required	Value Add
RS-001	<p>The Toll System Provider shall provide a Toll Collection System that accurately detects, classifies, rates and reports vehicles. The major function of the Roadside System is to accurately detect, classify and identify every vehicle passing through Toll Zones including the bi-directional lanes. The TCS shall provide the following functions:</p> <ol style="list-style-type: none"> <li>1. Detect, classify and rate vehicle Traffic Transactions in accordance with accuracy requirements and Performance Requirements;</li> <li>2. Provide backup and archiving functions;</li> <li>3. Operate in degraded modes with redundancy;</li> <li>4. Be audited from BOS to individual lane Traffic Transaction records; and</li> <li>5. Be a single source of toll collection data.</li> </ol> <p>The TCS shall generate a Traffic Transaction for every vehicle passing through any Equipment Lane of the Toll Zone. The Toll Zone shall accurately read Transponders, capture license plate images and classify vehicles anywhere in the Toll Zone between the left edge of the left shoulder and the right edge of the right shoulder, unless otherwise directed by the Joint Board.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement RS-001 , and this compliance is described below:  Kapsch will deliver a robust and proven Roadside System which meets and exceeds the performance requirements set for the LSIORB project. Our Roadside platform was built with high performance, essential reliability, consistent availability, and efficient serviceability. LSIORB is benefiting from the exhaustive tests, updates, lessons learned, and experiences of Kapsch in implementing this system in other projects around the country. We are confident in our solution, and look forward to executing our vision of making the LSIORB a showcase tolling system for North America.</p> <p>To further explain how the Kapsch Roadside will meet the requirements called for throughout this RFP, the following section goes into great detail on how the Roadside is designed and functions allowing for accurate tolling of all vehicles traveling the roadway and reconciliation of these transactions from their origination to their ultimate clearing through the back office.</p>		

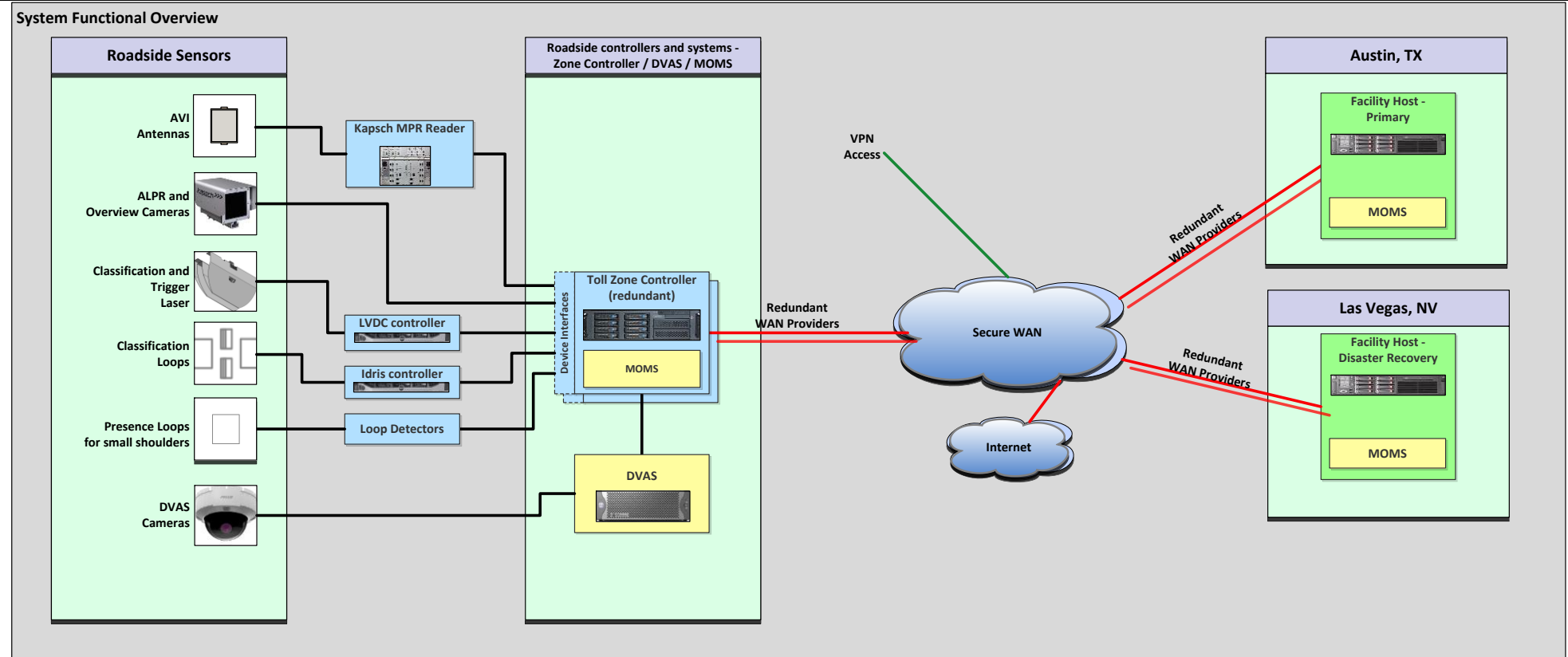


Figure 2-1 Overall Roadside System Diagram

**1. Detection, Classification, and Rating of Vehicle Traffic**

The initial action required to create a Traffic Transaction is the detection of a vehicle within the tolling zone. The Kapsch solution provides this detection function through our proven Automatic Vehicle Detection and Classification system (AVDC). The primary AVDC components, shown in orange on Figure 2-2 below, consist of an Idris in-pavement loop array and an overhead laser installation. Idris provides precise information for axle counting, longitudinal location, length, speed and lane number or straddle. The overhead laser provides precise height, width, speed, lateral location data and shape-based classification. These two components provide redundant detection, positioning, framing, and classification of all vehicles. Within the Toll Zone Controller, the Kapsch AVDC system fuses the information from these components such that there is no single point of failure.

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		
	[Redacted]		

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<div style="background-color: black; width: 100%; height: 100%; min-height: 600px;"></div>		

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<div style="background-color: black; width: 100%; height: 100%; min-height: 400px;"></div>		







Req ID	Roadside Requirements (Section RS)	Required	Value Add
RS-002	<p>The TCS shall implement classification-based toll rates for specific Toll Zones and specific lanes. Rates set by the Joint Board may vary by time of day and classification. The TCS shall categorize vehicles into at least ten unique classifications without the Joint Board incurring additional charges from the Toll System Provider. The Toll System Provider shall provide a vehicle classification system that provides sufficient vehicle characteristics to categorize all vehicles based upon FHWA vehicle classifications. Each vehicle type shall be mapped by axle count and/or profile (i.e. length, width, height) to the classification structure presented below that will be finalized with the Business Rules after award of Contract. In addition, the TCS shall identify and record extra axles for each vehicle detected (e.g. passenger vehicle pulling trailer), and assign a corresponding toll rate in accordance with the Business Rules. The TCS shall provide, at a minimum, the following rating categories:</p> <ol style="list-style-type: none"> <li>1. By vehicle class, from lowest to highest: <ol style="list-style-type: none"> <li>a. Class 1 (passenger vehicle),</li> <li>b. Class 2 (small truck), and</li> <li>c. Class 3 (large truck).</li> </ol> </li> <li>2. By type of Transaction: <ol style="list-style-type: none"> <li>a. Transponder with discount based upon a specified number of trips for a specified period of time (Class1 only),</li> <li>b. Transponder,</li> <li>c. Registered Video, and</li> <li>d. Unregistered Video</li> </ol> </li> <li>3. By other variables such as time of day.</li> </ol> <p>The TCS architecture shall support congestion pricing functionality from an external congestion pricing system in the future if required by the Joint Board.</p>	x	
	<p>Proposer Response:</p> <div style="background-color: black; width: 100%; height: 100%; min-height: 300px;"></div>		

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<p>[REDACTED]</p> <ul style="list-style-type: none"> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> </ul> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>		
RS-003	<p>The Toll System Provider shall ensure that no Traffic Transactions are lost and shall provide reports and the capability to check Traffic Transaction sequence numbers for purposes of audit and review. Transaction sequence number gaps shall be flagged by the BOS and reported by an alarm in MOMS.</p>	X	
	<p>Proposer Response:</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <ul style="list-style-type: none"> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> </ul> <p>[REDACTED]</p> <ul style="list-style-type: none"> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> </ul>		

Req ID	Roadside Requirements (Section RS)	Required	Value Add
[REDACTED]	<ul style="list-style-type: none"> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> </ul>		
	<div style="border: 1px solid black; background-color: black; width: 100%; height: 100%; min-height: 400px;"></div>		

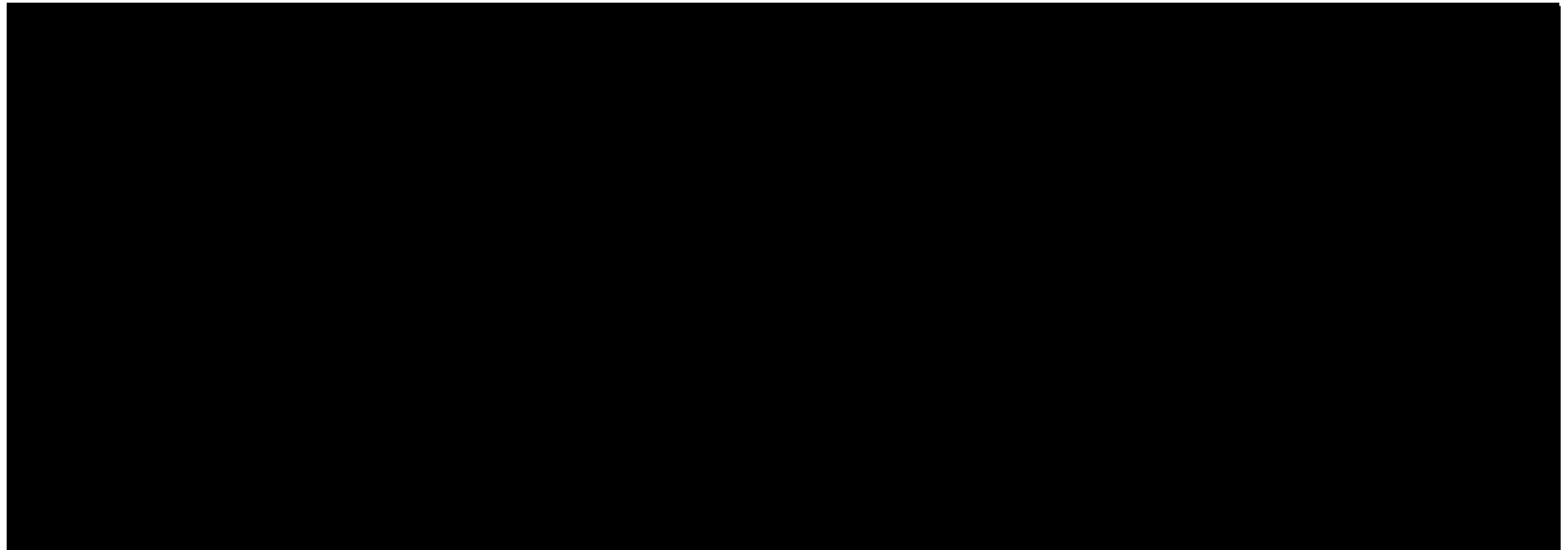

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<p>[REDACTED]</p>		
RS-004	<p>The Toll System Provider shall have a Second Source Hardware Plan for all Roadside System equipment, including functionally equivalent second sources for any equipment for which a direct second source is not available.</p>	X	
	<p>Note: The Proposer shall describe its Second Source Hardware Plan and list all second source Major Spare Parts in the Technical Response Form. The Proposer shall note any Roadside System Equipment that does not have a second source.</p> <p>Proposer Response:</p> <p>[REDACTED]</p>		

Req ID	Roadside Requirements (Section RS)	Required	Value Add

Req ID	Roadside Requirements (Section RS)	Required	Value Add
RS-005	It is desired that a second source be provided for all Hardware. If a second source is not available for Major Spare Parts, a functional equivalent shall be included in the list provided in accordance with RS-004, which shall include a functionally equivalent second source if a direct second source is not available. The list shall include the components' primary functions in the roadside, make, model number and any other pertinent information.		X
	Proposer Response: [Redacted]		
RS-006	The Toll System Provider shall provide a separate Toll Collection System that can discretely identify Traffic Transactions for each Equipment Lane for each direction of traffic at the Toll Zones.	X	
	Proposer Response: [Redacted]		
RS-007	The Roadside System shall run independently of the BOS and continue to build Traffic Transactions if communications are disrupted.	X	
	Proposer Response: [Redacted]		
RS-008	The Roadside System shall immediately build the Traffic Transaction with the information available, and shall operate in a degraded mode if some components are not functioning so that Performance Requirements are met.	X	
	Note: The Proposer shall indicate in its response the number of ETC readers, if any, over the number specified in Exhibit L that will be necessary for Proposer to meet this requirement.  Proposer Response: [Redacted]		

Req ID	Roadside Requirements (Section RS)	Required	Value Add
[REDACTED]	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
RS-009	The Toll System Provider shall provide a complete Roadside System, with ETC, AVC and Image Processing System, on all Equipment Lanes in the Toll Zone.	X	
[REDACTED]	Note: The Equipment Lane quantities in Form G - Price Proposal of the ITP reflect this requirement.		
	Proposer Response: [REDACTED]		



Req ID	Roadside Requirements (Section RS)	Required	Value Add
			
RS-010	<p>The Toll System Provider shall provide the network connections between Toll Zones and the BOS. The Toll System Provider shall comply with the System architecture requirements for data communications architecture and all other Technical Requirements when configuring and implementing the network system.</p>	X	
	<p>Proposer Response:</p> 		
RS-011	<p>The Toll System Provider shall size the communication link to handle all functions of the Roadside System and make the information available at the BOS, CSC and TOC in near-real-time. Near-real-time is defined as access to the Roadside System applications and data displayed from the BOS, CSC, TOC and from a VPN within 2 seconds.</p>	X	
	<p>Note: The Proposer shall provide in this Technical Response Form a network WAN diagram and LAN diagram for network communications between the Toll Zones, toll equipment cabinets and BOS.</p> <p>Proposer Response:</p>		

Req ID

Roadside Requirements (Section RS)

Required

Value Add

Kapsch fully complies with requirement RS-011 , and this compliance is described below: In addition to the diagram presented in Figure 2-1 Overall Roadside System Diagram, above in Section RS-001, the following is a WAN diagram describing the communications links allowing real-time data transfer between the Roadside System and the BOS/CSC/TOC. For a more detailed WAN diagram, please refer back to Figure 1-21 High-Level TCS Network Architecture with Clarifying Details, in SA-049.

Toll Zone Network

Each of the toll pads will be redundantly connected to commercial internet lines. These lines will provide the bandwidth necessary (50Mbps) to provide real-time updates, via secure VPN connections, to the Primary facilities in Austin, TX. If, for any reason, the Primary site is unavailable, the system automatically diverts network traffic to the Secondary site, also through secure VPN connections, in New Jersey. This automatic failover is built-in to the network system, and no user intervention is necessary to start the process. Between the Primary and Secondary sites is dedicated lines which replicate information in near real-time. This allows all information in the system to be synchronized and fully accessible in fail-over situations. Both the Primary and Secondary sites have the bandwidth necessary to support the LSIORB project and all of the required external interfaces.

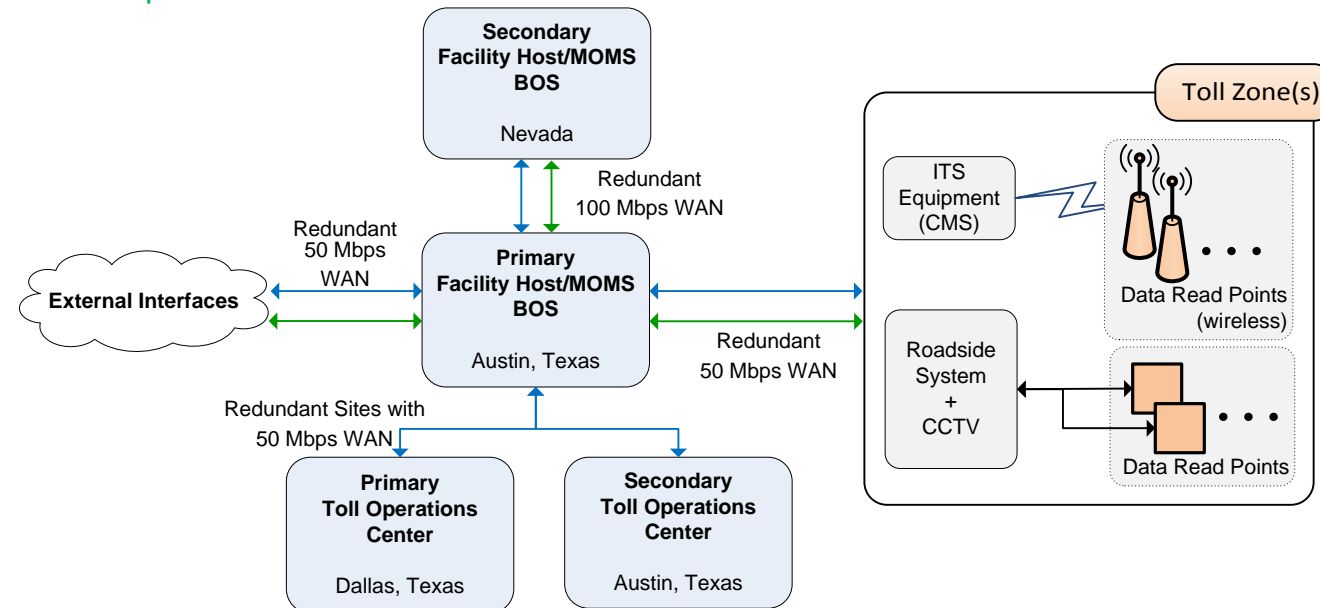


Figure 2-8 High-Level WAN Overview Diagram

Facility Host / BOS Network

The Primary Facility network equipment utilizes Gigabit speed switches in a redundant configuration. This prevents any single point of failure in the network from creating an operational disruption. The supplied Cisco 3750X switches each have 48 ports and support VLAN configurations. The switches are stacked to provide a total switch-switch throughput of 32Gbps. 10 Gbps redundant uplinks to the Service Access Switches are provided.

The local network will consist of two separate redundant networks. The LAN network (VM kernel/data network) provides data communication between the Host and the rest of the system including the Host workstations, the plazas, and the external interfaces. This network is shown in orange below. This network is de-coupled from the VMware HA cluster by a pair of network adapters that are bonded together. This presents a single IP address to the network while providing redundant connections. Each VM has its own VM data network IP which is routed to the physical network via the vSwitch, in this way a constant, fault tolerant IP is shown from each VM regardless of which physical machine the VM is running on in the cluster.

A second network is dedicated to management and VMware HA recovery and maintenance. This network is shown in blue below. This insures that a reliable HA heartbeat can be maintained and that in the event of a server failure system operation can be resumed as quickly as possible. There is also a dedicated maintenance network which provides access to features available through the HP ILO (Integrated Lights Out) out of band maintenance system. This network is used

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<p>for hardware based management, the IP based KVM also resides on this network.</p> <div style="background-color: black; width: 100%; height: 100%;"></div>		
RS-012	<p>The Joint Board will provide the Toll System Provider with a toll equipment site as shown in Attachment C-2. A 120/208 VAC commercial power service meter, provided by others, will be terminated at the equipment pad provided by others. Data communication conduits and a pull string will be provided by others from the toll equipment to the Toll Zone gantry. The final locations of the pads are being reviewed and are not yet final, but it is expected that the toll equipment pads will be within 330 linear feet of the Toll Zone gantry. The Toll System Provider shall provide all cabling and terminations for all data and power between the toll equipment pad and the Toll Zone gantry. A network connection from the toll equipment pad to a commercial service provider shall be provided by the Toll System Provider.</p>	X	

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<p>Note: Toll System Provider's architecture may include Toll Gantry mounted equipment.</p> <p>Proposer Response:  Kapsch fully complies with requirement RS-012 , and this compliance is described below:  Kapsch will equip and maintain all the necessary tolling, networking, and power equipment for the requested Toll Collection System. As shown in Figure 2-2 Proposed Kapsch TCS Roadside System – Side View (Typical Unidirectional Toll Zone) and Figure 2-3 Proposed Kapsch TCS Roadside System at East End Crossing – Top View, the equipment for tolling will be installed on the gantry, in-pavement, and at the toll pad as required.  The following list is indicative of the high-level equipment provided at the Roadside for the Toll Collection System:</p> <ul style="list-style-type: none"> <li>• On Gantry</li> <li>• ALPR Cameras (both Front and Rear)</li> <li>• Power Supplies</li> <li>• Idris Loop Array</li> <li>• Toll Zone Controllers</li> <li>• Power Supplies</li> <li>• Overhead Laser Classifiers</li> <li>• Gantry Cabinet</li> <li>• Ruggedized Network Switch(es)</li> <li>• Idris Axel Counting Array</li> <li>• Image Servers</li> <li>• VPN Access Point</li> <li>• ETC Antennas</li> <li>• ETC Reader</li> <li>• In-Pavement</li> <li>• Toll Pad</li> <li>• Network Switch(es)</li> <li>• Generator</li> </ul> <p>The proper cabling of power and data is the responsibility of Kapsch, and we will utilize the provided conduits for running the cables. Kapsch will work closely with the LSIORB civil contractor from NTP to efficiently design the equipment layout as quickly as possible. Our experience with tolling projects around the world has taught us to be proactive with the civil firms. The sooner all parties are on the same page with the sequence of events and the final planned locations, the sooner the detailed design documentation can be completed and sent to LSIORB for approval.</p>		
RS-013	The Toll System Provider shall provide a Roadside System with a minimum operational lifecycle of 10 years.	X	
	<p><b>Note:</b> The Toll System Provider shall specify the proposed Roadside System's operational lifecycle in this Technical Response Form.</p> <p>Proposer Response:  Kapsch fully complies with requirement RS-013 , and this compliance is described below:  All equipment supplied on the project has a guaranteed service life for 10 years at a minimum. As a manufacturer of tolling equipment, including the ETC Components provided in a separate contract, Kapsch is guaranteeing, for 10 years, the service life of the installed Roadside System. Kapsch will manufacture and stock the Kapsch components for at least 10 years. All other equipment, not manufactured by Kapsch, has multiple manufacturer sources or functional equivalents in the market. Upon installation and commencement of operations LSIORB will receive the latest versions of all hardware and software items, to ensure operational life for 10 years and beyond.</p>		
RS-014	The TSP shall provide all installation/setup of the network at the Toll Gantries and at the BOS/CSC, and associated costs shall be included in the Contract Price.		
	<p>Proposer Response:  Kapsch fully complies with requirement RS-014 , and this compliance is described below:  As shown in RS-011, the Kapsch system will contain the necessary networking equipment to fully connect all the components of the Roadside System, including the Toll Gantries and Toll Pads, and components of the BOS/CSC. The installation and setup is performed by Kapsch, and will be included as part of our included offering. As stated in Exhibit B, Responsibilities Matrix, Kapsch is in understanding of the related work splits between the DB Contractor, the Developer, ETC Contractor, and the TSP.</p>		
RS-015	All components of all equipment shall be modular in nature for maintenance, testing, and replacement purposes. All components shall be designed such that they are easily accessible with hand tools by maintenance technicians as needed.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement RS-015 , and this compliance is described below:  Our maintenance procedures, for our equipment, are well documented and best practices have been refined over years of maintenance of all subsystems.</p>		

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<p>Kapsch understands all maintenance activities must be accomplished in the most efficient ways to maintain performance of the system. Overhead mounted equipment, such as cameras and laser scanners are installed using quick release memory brackets which require no tools. The cameras and laser scanners have quick connector fittings for all cables rated to MIL-C-26482 spec. These two aspects combined allow maintenance of the cameras and illuminators to occur rapidly and efficiently by replacing the unit in the least amount of time possible. The priority for corrective maintenance on these devices is the least amount of downtime possible. All cabinet mounted equipment, both at the toll zone cabinet and gantry cabinet, is rack-mounted in standard 19-inch racks. This allows for easy maintenance and quick removal of equipment without affecting other cabinet mounted devices.</p> <p>As described, all Kapsch equipment is engineered for easy serviceability by technicians. No special tools are necessary to replace equipment installed at the Roadside System.</p>		
RS-016	It is desired that equipment enclosures, mounting Hardware, washers, brackets, screws, bolts and nuts exposed to the outdoor environment shall be constructed of American Iron and Steel Institute Type 316L grade stainless steel where possible.		X
	<p>Proposer Response:</p> <p><b>Kapsch implements Value-Add RS-016 , and this compliance is described below:</b></p> <p>All equipment enclosing, including the gantry mounted cabinet, and mounting hardware will be stainless-steel. <b>The standard Kapsch gantry cabinet has specifications requiring stainless-steel and a minimum life cycle of 10 years.</b> The specific cabinets and mounting hardware specified for this project shall meet the requirements stated within this RS-016.</p>		
RS-017	The Roadside System shall provide lightning and other surge protection such that the equipment can continue to perform without impact on normal functions during an electrical surge on the System. The TSP is responsible for surge protection as to the equipment it is providing, but may use the grounding apparatus provided by the DB Contractor and the Developer. The Toll System Provider shall provide its surge suppression and lightning protection design and plan no later than 180 days after NTP. The Toll System Provider shall implement the approved plan during the installation of the Toll Collection System.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement RS-017 , and this compliance is described below:</p> <p>The TCS will follow the field-proven examples used in the Kapsch LBJ, NTE and NYSTA toll zone implementations to protect toll equipment from lightning and/or power surges. Ethernet data from toll gantry to equipment pad will be transmitted via fiber (which is electrically non-conductive) with a RuggedCom RS-900 switch on each end. RF cabling from ETC Component's gantry-mounted antennas to the roadside Reader cabinets will include lightning protection and in-line surge suppressors. In-line surge protection against lightning and electrical surges will also be included on the coaxial cables connecting each in-pavement Vehicle Classification sensor to its electronics in the roadside Reader Cabinet. These plans will be reviewed after NTP with final site details and revised accordingly prior delivery no later than 180 days after NTP.</p>		
RS-018	The Roadside System shall classify vehicles under all weather conditions without any degradation.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement RS-018 , and this compliance is described below:</p> <p>The classification result from the AVDC relies on both the in-pavement loop system and the overhead laser classification. The redundancy provided by these two field-proven classification systems will allow the system to operate in all weather conditions without degradation. The IDRIS loop system is unaffected by weather due to its installation location and magnetic induction method of detection of vehicles. The laser detection and classification system, utilizing the latest generation SICK LMS-511 laser measurement scanners, is designed with a powerful multi-echo high speed sampling technology providing reliability even in the worst weather conditions. Kapsch is a leading provider of overhead vehicle classification with over 10,000 overhead classification lanes installed both in the United States and worldwide. Kapsch will be installing a laser detection and classification solution designed to classify vehicles on their volumetric (height, width, length) characteristics and, through statistical evaluation, assign a corresponding axle count for the vehicle. Complete classification redundancy is achieved through this approach while utilizing different sensor technologies that complement each other to improve performance in all conditions and provide maximum classification scheme flexibility in the future.</p>		
RS-019	The Toll System Provider shall provide remote access to authorized users with credentials and administrative controls of the Roadside System through the BOS. The Toll System Provider shall report each time the TCS is accessed remotely for any purpose, and identify from where and by whom the remote access was generated and make this report accessible to the Joint Board at all times.	X	

Req ID	Roadside Requirements (Section RS)	Required	Value Add
--------	------------------------------------	----------	-----------

Proposer Response:  
 Kapsch fully complies with requirement RS-019 , and this compliance is described below:  
 The Kapsch equipment at each toll zone has been designed to permit remote access via the BOS and TOC for administrative purposes by authorized personnel. All remote access to the equipment at a toll zone will be monitored at the BOS as well as at the TOC and TZC. This information can be made available to the Joint Board via audit reports described later in Section BO. All remote access to the Roadside System is managed by the user rights administered at the Facility Host/BOS level. All remote access into the Roadside is logged and recorded for the user, date, time, IP (access point), and activity level. Kapsch will provide the IP address of origination, though due to the inherit properties of the internet this could be a different physical location than from where the user is located when logging in.  
 User authentication rights are synchronized between the Host and RSS so that security is maintained event when the RSS is operating offline from the Host. A sample of the Web Interface provided for access to the RSS is shown below.



Figure 2-10 Central TZC configuration screen



Figure 2-11 User Login Screen via web interface at the Toll Zone Controller

RS-020	Toll System Provider shall take reasonable measures to ensure that all equipment in the Toll Zone is secure against damage, theft and vandalism, but is accessible by authorized personnel without special tools or equipment other than electronic or physical security keys or as may be necessary to assist in reaching heights.	X	
--------	---	---	--

Proposer Response:  
 Kapsch fully complies with requirement RS-020 , and this compliance is described below:

Req ID

Roadside Requirements (Section RS)

Required

Value Add

Roadside electronics will be mounted to industry-standard 19-inch rails on an equipment rack inside a NEMA-4 enclosure. Standard tools for rack mount equipment will be sufficient for their insertion and removal. Gantry-mounted equipment will be secured with brackets that require only standard nuts and bolts. Quick release memory brackets which require no tools will be included with all gantry-mounted cameras and lasers scanners, to permit quick-release during maintenance and/or replacement. Inherent with this design, and for the ease of accessibility, is the benefit of minimizing lane closure time.

Equipment cabinets containing TSP equipment will include secure 7-pin Mortise Cylinder locks, permitting only authorized personnel access into the Roadside system cabinets. Cabinet doors are monitored by CCTV and MOMS and an alert is triggered when any cabinet door is opened and closed. These alerts are linked to the access control and alarm monitoring system (ACAMS) system which stores a recording of the event and allows for live or recorded observation from the TOC. All authorized maintenance access to the equipment will be performed by personnel trained to the relevant operating and safety procedures.

**ACAMS Playback System**

**Cabinet Details**  
 System: TCS Location: LBJ Zone 88 Roadside Cabinet Cabinet: TCSC-0008B-801 Camera Name: ACAMS-0008B-01  
 DVR: 10.35.48.86:554

**Video**



Live Duration in seconds: 15 Live

**Current Status**  
 Front: Closed Rear: Closed

**Cabinet Activity**  
 Refresh

Event Time	Change
12/15/14 10:03:00	Rear Door Closed
12/15/14 10:02:49	Rear Door Open
11/25/14 12:48:14	Rear Door Closed
11/25/14 12:43:47	Rear Door Open
11/14/14 00:34:40	Rear Door Closed
11/14/14 00:33:11	Rear Door Open
10/23/14 02:39:29	Rear Door Closed
10/23/14 02:37:33	Front Door Closed
10/23/14 02:35:30	Front Door Open
10/23/14 02:31:37	Rear Door Open
10/23/14 02:30:32	Front Door Closed
10/23/14 02:30:29	Front Door Open
10/23/14 02:30:27	Front Door Closed
10/23/14 02:26:07	Front Door Open
10/22/14 13:03:56	Front Door Closed
10/22/14 13:03:48	Front Door Open
10/22/14 13:03:19	Rear Door Closed
10/22/14 13:02:41	Rear Door Open
10/06/14 06:44:08	Front Door Closed
10/06/14 06:43:26	Front Door Open

Figure 2-12 Kapsch ACAMS Overview

RS-021

The Toll System Provider provided equipment shall comply with the latest adopted version of the National Electrical Safety Code as defined in the applicable codes and standards.

X

Proposer Response:

Kapsch fully complies with requirement RS-021 , and this compliance is described below:  
 All toll equipment units will have prior vendor UL certification to confirm suitability for installation at these sites, in a safe manner. All wiring, from the service drop point to the toll equipment pads and within the equipment cabinets, will be performed by electrical personnel familiar with the applicable standards and certified for

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<p>work in both Indiana and Kentucky. All electrical work will be in accordance with National Electrical Code and performed by the local Kapsch subcontractor for this project, James H. Drew Corporation.</p> <p>James H. Drew Corporation has been providing design, products, labor, and services to the transportation and building construction industries for over 75 years. They are very familiar with the LSIORB project fully licensed in the state of Indiana and the Commonwealth of Kentucky.</p>		
RS-022	<p>A Traffic Transaction shall include, but not be limited to the following: date and time stamp, Toll Zone gantry location and lane number, unique transaction sequence number, vehicle classification, state or province, special plate identifier or vertical letter stack, license plate number, ETC Transponder id (if applicable), Watch List status (if applicable, based on plate or transponder read), and the status of lane and Roadside System (e.g. open, closed, maintenance, degraded, etc.).</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement RS-022 , and this compliance is described below:</p> <p>The Toll Transaction will include, but not be limited to, the following data:</p> <ul style="list-style-type: none"> <li>• Unique sequential transaction number</li> <li>• Transponder list used</li> <li>• Axle count</li> <li>• Length</li> <li>• Speed</li> <li>• Transponder ID and Status</li> <li>• ALPR OCR data including jurisdiction</li> <li>• ALPR Stacked Letters</li> <li>• RS status</li> <li>• Toll Gantry identifier</li> <li>• Toll Rate schedule in effect</li> <li>• Date &amp; Time stamp of transmission</li> <li>• Lane ID</li> <li>• Date &amp; Time stamp of transaction</li> <li>• Classification data</li> <li>• Class</li> <li>• Width</li> <li>• Height</li> <li>• Image record data</li> <li>• Toll Gantry status</li> <li>• Exempt Vehicles</li> <li>• RS errors (anomalies)</li> <li>• Toll Rate data</li> <li>• Watch List Status (based on plate or transponder read)</li> <li>• Date &amp; Time stamp of database insertion</li> <li>• Roadside System Status (open, closed, maintenance, or degraded)</li> </ul> <p>The Traffic Transactions issued by each Toll Zone Controller will include all of the above named information when it is available from the subsystem transaction matching process. As per RS-008, whenever some of this information is not available, a Traffic Transaction will still be issued, but it will be tagged as an Anomaly and with include additional information identifying the degree of missing information. In addition to the data fields described above, a front and rear vehicle image, uniquely referenced with the Traffic Transaction data fields, will also be sent from the Toll Zone Controller to the BOS. The BOS, not the Roadside System, will store images for use in manual image review and/or auditing functions.</p>		
RS-023	<p>It is desired that the Toll System Provider provide in-lane OCR capabilities. If in-lane OCR capabilities are provided, the OCR confidence values for the license plate numbers including any stacked characters and state shall be provided with the message. In-lane OCR capabilities shall meet the same Performance Requirements as OCR Performance Requirements as specified in the Performance Requirements.</p>		X
	<p>Proposer Response:</p> <p><b>Kapsch implements Value-Add RS-023 , and this compliance is described below:</b></p> <p>A trained ALPR OCR engine which processes the ALPR images to determine type, jurisdiction, and license plate number from the image. Kapsch shall provide in-lane OCR capabilities. The OCR assigns confidence values for the license plate characters, including any stacked characters and state jurisdiction, shall be provided with the confidence reporting, and the in-lane OCR [NOTE: implication, each individual OCR system, not just the combination of...] shall meet the same Performance Requirements as specified generally for OCR in the Performance Requirements.. Kapsch shall provide a trained ALPR on both rear and both front license plate images, determine confidence levels on individual characters, and feed this information into a data fusion engine to provide an overall image OCR confidence level. The TZC shall merge the Traffic Transaction data (classification data, ETC data, and transaction image data) with the license plate and overview images (as described in RS-022), and transmits to the Facility Host for additional processing and retention.</p>		



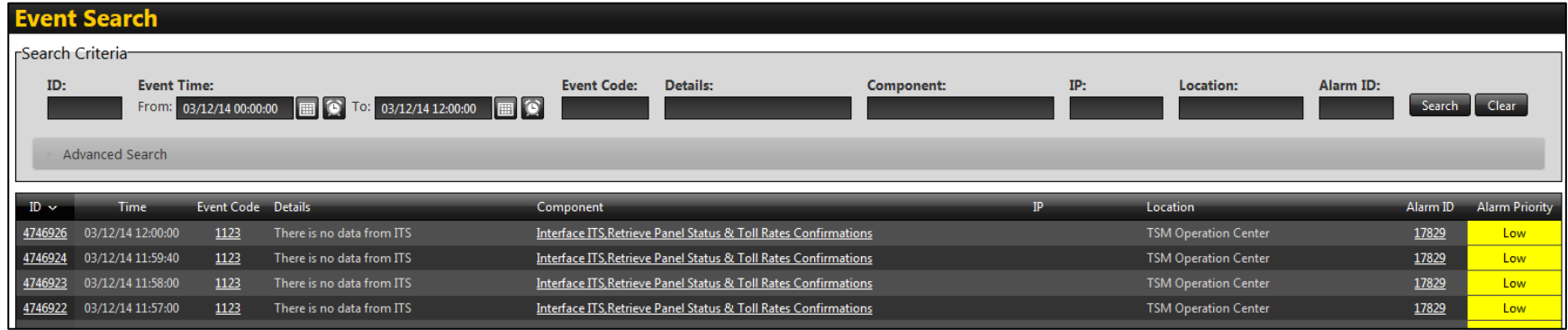
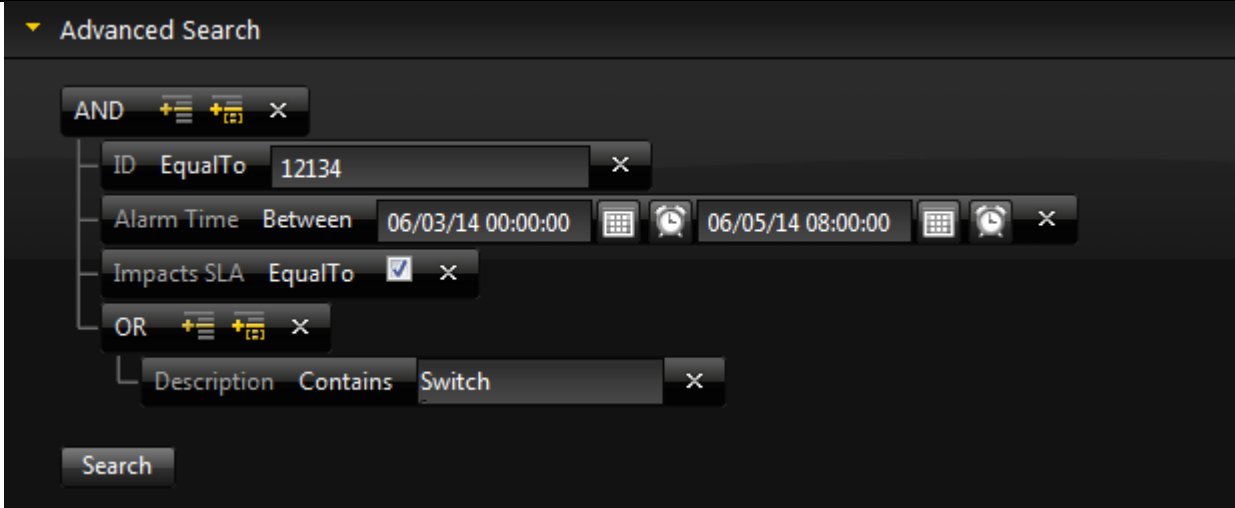
Req ID	Roadside Requirements (Section RS)	Required	Value Add																																													
RS-024	It is desired that the Toll System Provider provide Traffic Transaction, Financial Transactions and Event Transactions that are readable using commercially available and supported tools and that they shall be imported into a XML viewer or other commercial analytical tool such as Microsoft Excel.		X																																													
	<p>Proposer Response:</p> <p><b>Kapsch implements Value-Add RS-024 , and this compliance is described below:</b></p> <p>Kapsch shall provide Traffic Transactions, Financial Transactions, and Event Transactions which are readable using commercially available tools such as Toad, SQL Developer, Excel, or other database access methods. All transaction data shall be stored in readable formats and exportable to multiple commercial analytical and business tools.</p>																																															
RS-025	The Toll System Provider shall provide a thin-client application for Traffic Transactions, Financial Transactions and Event Transactions queries and traffic activity monitoring by individuals with proper identification and password authorization.	X																																														
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement RS-025 , and this compliance is described below:</p> <p>Our web GUI based interface (thin-client application) will be provided for access to all Toll Traffic Transactions and Event Data to generate queries and perform monitoring. This is an inherent part of the TCS system and all standard security access features are applied. We provide all authorized users to use our thin client application to access the BOS and view information regarding Traffic Transactions, Financial Transactions and Event Transactions, as well as traffic activity monitoring dashboards hosted at the BOS. Access controls for these and any other type of remote BOS access are described in more detail Section BO below.</p> <p>Kapsch will provide a thin-client application for the following transactions:</p> <ul style="list-style-type: none"> <li>• Traffic Transactions,</li> <li>• Financial Transactions</li> <li>• Event Transactions</li> <li>• Configurations</li> <li>• Alarm Data</li> </ul> <p>This application is accessible through a search/query facility available to individuals with proper identification and password authorization. A sample is shown in the screenshots below:</p>  <p>The screenshot shows an 'Event Search' interface with a search criteria form and a table of results. The search criteria form includes fields for ID, Event Time (From: 03/12/14 00:00:00, To: 03/12/14 12:00:00), Event Code, Details, Component, IP, Location, and Alarm ID. The table below shows four rows of event data:</p> <table border="1"> <thead> <tr> <th>ID</th> <th>Time</th> <th>Event Code</th> <th>Details</th> <th>Component</th> <th>IP</th> <th>Location</th> <th>Alarm ID</th> <th>Alarm Priority</th> </tr> </thead> <tbody> <tr> <td>4746926</td> <td>03/12/14 12:00:00</td> <td>1123</td> <td>There is no data from ITS</td> <td>Interface.ITS.Retrieve Panel Status &amp; Toll Rates Confirmations</td> <td></td> <td>TSM Operation Center</td> <td>17829</td> <td>Low</td> </tr> <tr> <td>4746924</td> <td>03/12/14 11:59:40</td> <td>1123</td> <td>There is no data from ITS</td> <td>Interface.ITS.Retrieve Panel Status &amp; Toll Rates Confirmations</td> <td></td> <td>TSM Operation Center</td> <td>17829</td> <td>Low</td> </tr> <tr> <td>4746923</td> <td>03/12/14 11:58:00</td> <td>1123</td> <td>There is no data from ITS</td> <td>Interface.ITS.Retrieve Panel Status &amp; Toll Rates Confirmations</td> <td></td> <td>TSM Operation Center</td> <td>17829</td> <td>Low</td> </tr> <tr> <td>4746922</td> <td>03/12/14 11:57:00</td> <td>1123</td> <td>There is no data from ITS</td> <td>Interface.ITS.Retrieve Panel Status &amp; Toll Rates Confirmations</td> <td></td> <td>TSM Operation Center</td> <td>17829</td> <td>Low</td> </tr> </tbody> </table>	ID	Time	Event Code	Details	Component	IP	Location	Alarm ID	Alarm Priority	4746926	03/12/14 12:00:00	1123	There is no data from ITS	Interface.ITS.Retrieve Panel Status & Toll Rates Confirmations		TSM Operation Center	17829	Low	4746924	03/12/14 11:59:40	1123	There is no data from ITS	Interface.ITS.Retrieve Panel Status & Toll Rates Confirmations		TSM Operation Center	17829	Low	4746923	03/12/14 11:58:00	1123	There is no data from ITS	Interface.ITS.Retrieve Panel Status & Toll Rates Confirmations		TSM Operation Center	17829	Low	4746922	03/12/14 11:57:00	1123	There is no data from ITS	Interface.ITS.Retrieve Panel Status & Toll Rates Confirmations		TSM Operation Center	17829	Low		
ID	Time	Event Code	Details	Component	IP	Location	Alarm ID	Alarm Priority																																								
4746926	03/12/14 12:00:00	1123	There is no data from ITS	Interface.ITS.Retrieve Panel Status & Toll Rates Confirmations		TSM Operation Center	17829	Low																																								
4746924	03/12/14 11:59:40	1123	There is no data from ITS	Interface.ITS.Retrieve Panel Status & Toll Rates Confirmations		TSM Operation Center	17829	Low																																								
4746923	03/12/14 11:58:00	1123	There is no data from ITS	Interface.ITS.Retrieve Panel Status & Toll Rates Confirmations		TSM Operation Center	17829	Low																																								
4746922	03/12/14 11:57:00	1123	There is no data from ITS	Interface.ITS.Retrieve Panel Status & Toll Rates Confirmations		TSM Operation Center	17829	Low																																								

Figure 2-13 Basic Search for Events

Operators may use the advanced search tools as shown below:

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	 <p style="text-align: center; color: green;">Figure 2-14 Advanced Search for Events</p>		
RS-026	<p>The Toll System Provider shall provide vehicle detection, separation, classification and camera triggering such that there are no single points of failure (e.g. using redundant subsystems - smart loop system and overhead laser scanner) in the TCS, and it shall continue to detect, separate, and classify vehicles and capture front, rear and color overview images of each vehicle without degradation for vehicles traveling at speeds from and including 0 MPH to 100 MPH, in stop and go conditions, and in all weather and lighting conditions.</p>	X	
	<p>Note: The Proposer shall include a description of the image triggering process and priorities in this Technical Response Form.</p> <p>Proposer Response:  Kapsch fully complies with requirement RS-026 , and this compliance is described below:</p> <p>Redundancy will be provided in the classification system such that there is no single point of failure. This includes the use of overhead lasers scanners to both supplement and improve the classification of the loop system. This will provide redundancy in the RS to detect, separate, and classify vehicles even in the event of a single sensor failure. The IDRIS loop system is designed to detect, separate, and classify vehicles at speeds of 0-100 mph. The Kapsch laser scanners, installed in over 10,000 lanes worldwide, are designed to operate at speeds of 0-100+ mph. Complete classification redundancy is achieved through this approach while utilizing different sensor technologies that complement each other to improve performance and <b>provide future classification scheme flexibility</b>. As stated above in RS-018, the redundancy provided by these two field-proven classification systems will allow the system to operate in all weather conditions without degradation. Kapsch is implementing a similar classification configuration for the New York State Thruway Authority.</p> <p>The AVDC lane solution includes multiple sensor sources for vehicle detection, axle counting, vehicle height profiling, camera triggering, and vehicle separation detection as shown in Table 1-2 Roadside Sensor Redundancy. Under the following failure conditions, classification accuracy experiences only a slight degradation due to fewer sensor inputs being available to provide the weighted inputs utilized in the vehicle classification and transaction generation algorithm.</p> <ul style="list-style-type: none"> <li>• Idris system failure: In the event of an Idris system failure or a major loop failure the TZC continues to process intermediate messages as available while reducing the associated weighting. In this case the primary source of classification data will become the laser subsystem.</li> <li>• Laser scanner failure: The laser scanner array as shown in the top view of the lane. If a single laser scanner fails, height profiling and other AVDC functions using laser inputs will continue by using the relevant portion of the data from laser scanners on adjacent lanes. If the laser line fails (e.g. network switch) the loop array will continue to function providing full profiling and separation data. Any sensor failure will impact the weighting applied to that sensor subsystem.</li> </ul> <p>Depending on the sensor fault, even multiple sensor failures within the toll zone will be tolerated without adversely impacting lane performance. The TZC software adjusts the applied weighting based on the status information associated with each sensor at the time of processing. This status information is updated directly at</p>		

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<p>the device driver level.</p> <p>Under any error or fault condition, flags within the transaction record indicate which data fields have been impacted. The overall classification confidence value is adjusted as necessary based on the failure and its impact on classification accuracy. Any detected device failure is reported to MOMS. In addition to the transaction marking, linkage to the raw sensor data is retained and is available for inspection.</p>		
RS-027	<p>The Toll Collection System shall receive and process BOS configuration information including Toll Rate Schedules, Transponder files, video license plate files, and other configurations as required.</p>	X	
	<p>Proposer Response:</p> <p>[REDACTED]</p>		
RS-028	<p>The Roadside System shall provide one of the following options:</p> <ol style="list-style-type: none"> <li>1. Send the transactions to the BOS immediately without batching, i.e., in near-real-time, or</li> <li>2. Send transactions to the BOS every 4 hours (or more frequently) which would allow batching.</li> </ol>	X	
	<p>Note: The Proposer shall indicate in this Technical Response Form which option will be provided in the TCS.</p> <p>Proposer Response:</p> <p>[REDACTED]</p>		
RS-029	<p>The Roadside System shall meet the service level requirements for audit, reporting, and all other business functions. No Transactions shall be lost during periods when communications with the BOS are not available. Transactions shall be available to be manually (via laptop or tablet) downloaded from the Roadside System and BOS in case of long term loss of communications between the BOS and Roadside System.</p>	X	
	<p>Proposer Response:</p> <p>[REDACTED]</p>		

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<p>[REDACTED]</p> <ul style="list-style-type: none"> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> </ul> <p>[REDACTED]</p>		
RS-030	The Toll System Provider shall take reasonable measures to protect the Roadside System from vermin and keep it rodent proof at all times.	X	
	<p>Proposer Response:</p> <p>[REDACTED]</p> <ul style="list-style-type: none"> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> <li>■ [REDACTED]</li> </ul>		
RS-031	<p>It is desired that the Roadside System accurately account for full revenue or indicated revenue when there is a toll suspension or special event that requires the toll rates to be set at less than the full toll amount to allow the Joint Board to track revenues expected during these events for the purpose of collections in the future within each transaction. The desired revenue fields in the roadside transaction message include but are not limited to full revenue (i.e. non discounted toll) and indicated revenue (i.e. premium or discounted toll subtracted from the full amount). It is desired that indicated revenue be configurable from 0% to 100% discounted from full revenue. For example, for a toll suspension, the full revenue and indicated revenue would be the same toll amount and the actual rate would be \$0.00. This approach is desired as it provides clear traceability of revenues lost due to the toll suspension at the Transaction level.</p>		X
	<p>Proposer Response:</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>		

rates for each transaction. Below are examples of our current summary screens showing the base toll rate. These will be expanded to reveal the collected rate as well.

### 101-Transaction Summary



Report Criteria						Highlight View
Print Time:	07/12/2013 11:04:30	Printed By:	Parik Panwar	AVDC Class:	All	Group Trans by Trip?: No
Start Time:	07/01/2013 14:14:14	Toll Zone:	All	Tag Status:	All	
End Time:	07/01/2013 23:15:15	Lane:	All	Sent To Host:	None Selected	
Road:	I75-South	Trip Type:	All	Trans ID:	N/A	

**Report Description** This report shows a listing of transactions for the selected parameters. Transaction ID field can be used for drill down purpose to see the detailed transaction report.

Trans ID	Date Time	Road	Toll Zone	Lane-Direction	Trip ID	Trip Type	Tag ID	Tag Status	Tag Class	AVDC Class	LPN	Rate Type	Toll Fare	Speed (m.p.h)	Sent To Host
<a href="#">12345</a>	07/01/2013 14:16:52	I75-South	Tolling Zone 1	1- South	<a href="#">453</a>	AVI	52332	Valid	2	2	AHKN 302	Rush Hour	\$2.75	64	Yes
<a href="#">12346</a>	07/01/2013 14:17:33	I75-South	Tolling Zone 2a	1- South	<a href="#">459</a>	AVI	1222	Valid	4	4	ABCD-123	Rush Hour	\$3.75	42	Yes
<a href="#">12347</a>	07/01/2013 14:17:56	I75-South	Tolling Zone 1	2- South	<a href="#">467</a>	AVI	4512	Valid	2	2	GOOGLE	Rush Hour	\$2.75	23	Yes
<a href="#">12348</a>	07/01/2013 14:18:22	I75-South	Tolling Zone 2b	3- South	<a href="#">478</a>	AVI	2564	Valid	2	2	YZC-6465	Rush Hour	\$2.75	17	No
<a href="#">12349</a>	07/01/2013 14:18:34	I75-South	Tolling Zone 1	1- South	<a href="#">489</a>	AVI	2670	Low Bal	2	2	MKZ-2345	Rush Hour	\$2.75	65	Yes
<a href="#">12350</a>	07/01/2013 14:18:59	I75-South	Tolling Zone 1	2- South	<a href="#">490</a>	AVI	98234	Valid	5	5	YARIS-909	Rush Hour	\$6	45	No
<a href="#">12351</a>	07/01/2013 14:19:52	I75-South	Tolling Zone 2b	4- South	<a href="#">497</a>	AVI	553344	Invalid	2	2	CAR 16	Rush Hour	\$2.75	19	No
<a href="#">12352</a>	07/01/2013 15:16:17	I75-South	Tolling Zone 1	3- South	<a href="#">498</a>	AVI	40976	Valid	4	4	BEAMER 1	Rush Hour	\$3.75	52	Yes
<a href="#">12353</a>	07/01/2013 15:56:43	I75-South	Tolling Zone 2a	1- South	<a href="#">500</a>	AVI	3675	Valid	1	1	FIAT-500	Rush Hour	\$1.75	34	Yes
<a href="#">12354</a>	07/01/2013 16:16:16	I75-South	Tolling Zone 2a	2- South	<a href="#">502</a>	AVI	3428	Low Bal	4	4	MDX 2345	Rush Hour	\$3.75	44	Yes
<a href="#">12355</a>	07/01/2013 16:17:18	I75-South	Tolling Zone 1	2- South	<a href="#">510</a>	AVI	8890	Invalid	4	4	MARSHAL	Rush Hour	\$3.75	67	Yes
<a href="#">12356</a>	07/01/2013 16:32:48	I75-South	Tolling Zone 1	4- South	<a href="#">511</a>	AVI	8450	Invalid	3	3	NYC-001	Rush Hour	\$5.75	27	No
<a href="#">12357</a>	07/01/2013 17:18:19	I75-South	Tolling Zone 1	3- South	<a href="#">513</a>	AVI	6330	Valid	5	5	7832323D	Rush Hour	\$6	39	No
<a href="#">12358</a>	07/01/2013 21:22:23	I75-South	Tolling Zone 2b	2- South	<a href="#">516</a>	AVI	7860	Valid	6	6	GFF-4455	Off Peak	\$8.50	68	Yes
<a href="#">12359</a>	07/01/2013 21:45:23	I75-South	Tolling Zone 2a	2- South	<a href="#">555</a>	AVI	7000	Valid	2	2	MAN UTD1	Off Peak	\$2.75	38	Yes
<a href="#">12360</a>	07/01/2013 22:16:53	I75-South	Tolling Zone 1	1- South	<a href="#">556</a>	AVI	9999	Valid	2	2	TAB 8787	Off Peak	\$2.75	45	Yes

Report Summary				Total Transactions:	16
By Toll Zone	Tolling Zone 1:	9	By Tag Status	Valid:	11
	Tolling Zone 2a:	4		Invalid:	3
	Tolling Zone 2b:	3		Low Bal:	2
			By Trip Type	AVI:	16
				Plate Based:	0
				AVI Violation:	0
			By Toll Revenue	Toll Fare:	\$55.75
				Lost Rev:	\$0

Figure 2-15 Roadside System Transaction Summary Report (Example)

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<p>In addition to the specific Transaction Summary report, a Daily Traffic and Revenue report will document both the full and the collected (discounted) rates of the day (or time period chosen).</p> <div style="background-color: black; width: 100%; height: 400px; margin: 10px 0;"></div> <p>As the discounts are applied, per the Joint Board, the full revenue of the system will be recorded and auditing will demonstrate the difference between the end collected revenue versus anticipated.</p>		
RS-032	<p>The Toll System Provider shall provide time synchronization for the TCS. All elements shall use this time for all associated time stamps.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement RS-032 , and this compliance is described below:</p> <p>A hierarchal time synchronization strategy will be used that is synchronized to a central GPS NTP timeserver. In the event of a network disconnect from the central GPS server each individual toll zone will synchronize to its own local NTP timeserver. This approach will ensure that all TZCs are time synchronized and that all events within a Toll Zone use the same time, even in the event of off line operation.</p> <p>The BOS distributes network time via NTP to all TZCs. Each Toll Zone Controller distributes network time to all its subsystems within its Toll Zone. All time-stamped sensor data received from the lane uses this network time. The subsystems which utilize the network time are as follows:</p> <ul style="list-style-type: none"> <li>• ETC Component (Kapsch Multiprotocol Readers)</li> <li>• ALPR Cameras</li> <li>• IDRIS In-Pavement Loop Controller</li> </ul>		

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<ul style="list-style-type: none"> <li>Laser Vehicle Detection and Classification Subsystem</li> <li>Toll Zone Controller</li> </ul>		
RS-033	The current E-ZPass Transponder list is approximately 44,000,000 entries for approximately 26,000,000 Transponders. The list is expected to be 95,000,000 entries in the next 5 years. The TCS shall process the current size Transponder list and current anticipated growth and shall process E-ZPass transactions in accordance with the E-ZPass policies and procedures.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement RS-033 , and this compliance is described below:  The Kapsch Roadside System and its Facility Host are designed to process the full E-ZPass list, including growth over the life of the system. The list storage and process mechanism is designed to process the full list end to end in less than 5 minutes from receipt to usage at the Toll Zone. The robust Kapsch system is capable of scaling as appropriate to handle all future lists necessary from E-ZPass and any other Interoperability Agencies. With our experience in handling the E-ZPass transponder list, Kapsch possesses the proven experience to accurately manage the current and anticipated growth requirements for LSIORB.</p>		
RS-034	The Toll Collection System shall process E-ZPass Group files or lists received from the BOS including the Transponder list (ITAG file), customer license plate list (ICLP file), invalid Transponder customer list (IITC file), and authorized non-revenue vehicles.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement RS-034 , and this compliance is described below:  The Kapsch Roadside system is designed to process any lists and files required to provide full operation within the RFP requirements. This includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>E-ZPass Transponder list (ITAG file)</li> <li>Local Tag Status Lists (6C tags)</li> <li>Watch lists</li> <li>E-ZPass Customer License Plate Lists (ICLP file)</li> <li>Local Customer License Plate Lists</li> <li>E-ZPass Invalid Transponder Lists (IITC file)</li> <li>Local Invalid Transponder Lists</li> <li>Authorized Non-Revenue Vehicle Lists</li> <li>Any Configuration or Control files</li> </ul> <p>Kapsch is processing the full Transponder list distributed by the E-ZPass Group files for the New York State Thruway Authority.</p>		
RS-035	The Roadside System shall be remotely accessible and user configurable to view operational status and data for reconciliation purposes.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement RS-035 , and this compliance is described below:  The Roadside System is remotely accessible by authorized users from the browser based GUI interfaces. Remote access to the Roadside should be carefully managed to avoid system security threats. Remote access provides connection to MOMS where the operational state of the system can be viewed, and work orders can be searched. Access is controlled by user credentials, and thus it is possible to allow specific users to open and create new work orders that request a change to the system configuration. All changes however must follow the established configuration control process.  Reconciliation in the context of the roadside includes access to transactional data. All data recorded during the creation of transactions is saved in databases at each site, and the final transactions are recorded in the Facility Host. Queries to these databases can retrieve the transactions, and all raw data from the remote Toll Zones. Access to this data is provided through the MOMS interface. We strive to maintain fidelity of the data, and control of access to it, but provide total access to all information created during the passage of a vehicle. This includes faults and alarms in order to facilitate potentially correlating detected anomalies in transactions with equipment outages, configuration and status.</p>		
RS-036	The Roadside System shall be installed and configured for multi-lane free flow tolling operations. The Roadside System requirements apply, and the Roadside System shall accurately process all Traffic Transactions in accordance with the Performance Requirements, regardless of the vehicle position while traveling within	X	

Req ID	Roadside Requirements (Section RS)	Required	Value Add
--------	------------------------------------	----------	-----------

	the Toll Zone.		
--	----------------	--	--

[Redacted]	Proposer Response:		
	[Redacted]		

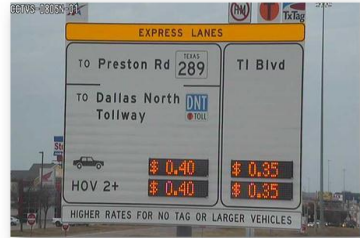
RS-037	The Roadside System shall accurately capture and process 2,300 vehicles per hour per equipment lane at each Toll Zone for all vehicle types.	X	
--------	--	---	--

[Redacted]	Proposer Response:		
	[Redacted]		



Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<div style="background-color: black; height: 20px; width: 100%;"></div> <div style="background-color: black; height: 20px; width: 100%;"></div> <div style="background-color: black; height: 20px; width: 100%;"></div>		
RS-038	The Roadside System shall accurately toll vehicles traveling at any speed up to 100 miles per hour.	X	
	Proposer Response: <div style="background-color: black; height: 20px; width: 100%;"></div> <div style="background-color: black; height: 20px; width: 100%;"></div> <div style="background-color: black; height: 20px; width: 100%;"></div> <div style="background-color: black; height: 20px; width: 100%;"></div> <div style="background-color: black; width: 100%; height: 100%;"></div> <div style="background-color: black; height: 20px; width: 100%;"></div>		

Req ID	Roadside Requirements (Section RS)	Required	Value Add
RS-039	The Roadside System shall operate so as to meet all Performance Requirements in an ambient (external to cabinet) temperature range of -20°F to 120°F in full sun or shade with a relative humidity ambient from 5 to 100 % (external to cabinet).	X	
	<p>Proposer Response:</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>		
RS-040	The Toll System Provider shall provide, install and configure a generator that allows the Roadside System to operate without refueling for 72 consecutive hours. The Toll System Provider shall provide a single generator per each Toll Gantry. The Toll System Provider shall provide all labor, materials and equipment and perform all civil work required to prepare a concrete pad for the generator.	X	
	<p>Note: A diagrammatic view of the toll equipment site including the location of the generator is provided in Attachment C-2.</p> <p>Proposer Response:</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>		
RS-041	The Toll System Provider shall provide a Changeable Message Panel LED 35 x 7 array Daktronics 1020 DDMS or approved equivalent. The Toll System Provider shall provide a local serial connection and wireless option. The Toll System Provider shall provide, procure, install, test and configure the changeable message panels. The Toll System Provider shall connect the TCS with the sign to update rates via a wireless communication. The changeable message panels shall provide rate information between \$0 - \$99.99 dollars and shall also be able to display other text information such as No Tolls.	X	
	<p>Note: The toll rate sign structures and foundations will be provided by others. A diagrammatic view of the toll rate signs is provided in Attachment C-4.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement RS-041, and this compliance is described below:</p>		

Req ID	Roadside Requirements (Section RS)	Required	Value Add																
	<p>The Changeable Message Panel will be a Daktronics model number VM-1020-7x35-66-A, which is the LED panel used to display the toll rate to drivers in advance of the bridges. This LED panel will provide for an active matrix capacity of 7 pixels high by 35 pixels across, and provides for a message capacity of 7 alpha-numeric characters, 18-inches high, and is fully compliant with MUTCD. The LED panels are designed to be directly mounted onto static sign panels, which will be supplied by others, as stated in Attachment C-4 of the Technical Requirements. Each static sign panel will contain 6 LED panels, in accordance with Attachment C-4 and the requirements. The LED panels will display \$0 to \$99.99 as stated in the requirement, and also will display text messages within the character capacity of the display. Kapsch has successfully installed and integrated Daktronics signs on eight previous projects. Most recently, Daktronics sign inserts have been used to display toll rates on the LBJ/NTE Managed Lanes project in Dallas, as noted in the picture. Kapsch will provide the wireless communication system, allowing the 8 static sign locations to communicate with, and be monitored by, the Traffic Operations Center. The monitoring of the Toll Rate Displays will be through CCTV CMS verification cameras installed at each sign location, and will be provided by Kapsch in complete accordance with Attachment C-4 in the RFP requirements.</p>  <p>Posted toll rates, as enacted by The Joint Board, are transmitted from the TCS to the sign locations. Confirmation of the toll rates on the displays will be confirmed by the video feed of the CMS verification camera, monitored by the TOC. Each sign location will include a cabinet to house the CMS control equipment, including the sign controller for the 6 LED panels. As an additional verification path to confirm the toll rate, communication to the sign controller will provide a pixel-by-pixel message verification of what is displayed on the LED panel. To support rate messaging at a site during communication failures, a historical rate table is downloaded into the sign controllers as a message schedule with two components: a local message library which includes all the scheduled messages and a message schedule which sets when each message should be displayed. Time of Day, Day of Week, Day of Month and Day of Year scheduling is supported. This schedule at the controller is only activated after a configurable period of communication loss or (optionally) after a reset of the controller. The sign controller is configurable as to how it should respond, and what message should be displayed in the event of a power or communication loss. The sign can display a blank message, the last message received, or default to a schedule as described above. This will allow The Joint Board configurability and flexibility in allowing the signs to operate in accordance to the business rules and operation plan.</p>																		
RS-042	It is desired that all electrical equipment and components be certified by Underwriters Laboratory.		X																
	<p>Proposer Response:  <b>Kapsch implements Value-Add RS-042 , and this compliance is described below:</b>  Kapsch shall provide the certification or equivalent by Underwriters Laboratories for the components shown in Table 2-5, below:</p> <p style="text-align: center;">Table 2-5 Component UL Compliance</p> <table border="1"> <thead> <tr> <th>Component</th> <th>UL (or Equivalent) Listing Compliance</th> </tr> </thead> <tbody> <tr> <td>Kapsch Reader (Supplied via ETC Contract)</td> <td>UL 60950-1</td> </tr> <tr> <td>Kapsch VR-X Camera</td> <td>UL E323290</td> </tr> <tr> <td>Kapsch External Illuminators</td> <td>UL E323290</td> </tr> <tr> <td>Toll Zone Controllers</td> <td>UL Compliance from Manufacturer (Corvalent)</td> </tr> <tr> <td>Laser Scanners</td> <td>UL Compliance Guaranteed from Manufacturer (SICK)</td> </tr> <tr> <td>Loop System</td> <td>UL Compliance Guaranteed from Manufacturer (3M)</td> </tr> <tr> <td>Power Supplies</td> <td>UL Listed (Phoenix Contact GMBH &amp; Co KG)</td> </tr> </tbody> </table>	Component	UL (or Equivalent) Listing Compliance	Kapsch Reader (Supplied via ETC Contract)	UL 60950-1	Kapsch VR-X Camera	UL E323290	Kapsch External Illuminators	UL E323290	Toll Zone Controllers	UL Compliance from Manufacturer (Corvalent)	Laser Scanners	UL Compliance Guaranteed from Manufacturer (SICK)	Loop System	UL Compliance Guaranteed from Manufacturer (3M)	Power Supplies	UL Listed (Phoenix Contact GMBH & Co KG)		
Component	UL (or Equivalent) Listing Compliance																		
Kapsch Reader (Supplied via ETC Contract)	UL 60950-1																		
Kapsch VR-X Camera	UL E323290																		
Kapsch External Illuminators	UL E323290																		
Toll Zone Controllers	UL Compliance from Manufacturer (Corvalent)																		
Laser Scanners	UL Compliance Guaranteed from Manufacturer (SICK)																		
Loop System	UL Compliance Guaranteed from Manufacturer (3M)																		
Power Supplies	UL Listed (Phoenix Contact GMBH & Co KG)																		
RS-043	The Roadside system shall be sized to operate continuously for 72 continuous hours without interruption in case of commercial power loss.	X																	
	<p>Note; The Proposer shall describe in this Technical Response Form how the system will operate continuously for 72 hours without loss of any data.</p> <p>Proposer Response:  Kapsch fully complies with requirement RS-043 , and this compliance is described below:  The Roadside System is designed to function in stand-alone operations for up-to 72 hours, due to electrical loss. All components are powered by the APC</p>																		

Req ID	Roadside Requirements (Section RS)	Required	Value Add
	<p>SmartUPS system. The load of all components is less than 40 kW, and UPS system chosen will support the load of the system. Supporting the UPS, will be battery packs of sufficient capacity to maintain the system for 3 hours. Each Toll Zone will contain a generator, as described above in RS-040. Upon primary power failure, the UPS system maintains all the equipment of the Roadside System. After a configurable time period, the generator will power on to take over the primary power supply needs of the system. The UPS conditions the power out of the generator to maintain clean power to all the components, but the main source will be the generator until the mains power is restored to the site. This is an automated process, without the need for any human intervention. Upon mains power failure, the UPS will send an alarm to the MOMS alerting the maintenance staff of the power failure at the site. The generator will have sufficient fuel to power the site for one week, without the need for refueling.</p> <p>Kapsch understand the processes and steps necessary to maintain a complete Roadside System. The time limits chosen for the power systems allow for maintenance crews time to restore power if back-up systems fail for any reason. The emergency procedures will document all the options necessary to keep the system in revenue collection. With this process, no data is lost.</p>		
RS-044	<p>It is desired that wrong way detection functionality including reporting and alarms associated with a vehicle passing through a Toll Zone in the wrong direction be provided in the TCS.</p>		X
	<p>Proposer Response:  <b><i>The Kapsch Roadside System incorporates Value-Add RS-044 , and this compliance is described below:</i></b>  Kapsch shall provide a primary classification system that is able to detect a vehicle which is traveling opposite to the planned direction of travel. [e.g. wrong-way detection] The roadside system shall be able to detect and flag any vehicle passing opposite to the planned flow of traffic.  Our primary classification system using Idris is able to detect vehicle traveling opposite to the planned direction of travel. In addition our overhead system also detects the passage of vehicles traveling in the wrong direction based one the timestamps and progression of vehicles through and under the scanning lasers. Together, the roadside is able to detect and flag any vehicle passing opposite to the planned flow of traffic. For clarity, sites that are bi-directional will still detect vehicles traveling the wrong way, as wrong way is always relative to the intended direction of travel.  In these cases it may be possible to read the tag and capture the plate, nevertheless a transaction is created and sent to the Facility Host database and through to the Back Office with flags to indicate that this is a wrong way vehicle. An immediate event is raised and sent to MOMS where it is alarmed. Additional actions can be performed at the direction of the Joint Board, including creation of evidence packets to be provided to enforcement authorities. For the purposes of finances, these transactions should be connected to a GL account which is separate from regular tolls depending upon the business rules defined including rules for posting. Our recommendation is to create a wrong-way non-revenue account for each site. This would facilitate grouping these transactions for easier review and audit.</p>		

**Back office System Requirements**

		Required	Value Add
Req ID	Back office (Section BO)		
BO-001	The Toll System Provider shall provide a BOS that consists of a transaction system and an account management system to manage toll accounts and process Traffic Transactions, Financial Transactions and Event Transactions.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-001 , and this compliance is described below:                      The Kapsch Team solution is an end-to-end integrated system that offers a full suite of services, including all back office tolling functions such as event transaction processing, ETC transaction processing, video transaction processing, account management, violations and collections processing, transponder management, and reconciliation of financial transactions.</p> <p>Key differentiators of the Kapsch Team's Back Office solution are:</p> <ul style="list-style-type: none"> <li>• One integrated system for managing customers and violators at a transaction level.</li> <li>• A “one account” based system that offers the depth and flexibility necessary to support this project.</li> <li>• Single sign-on user authentication process that permits the user to enter one name and password in order to access multiple applications.</li> <li>• Designed to support a large selection of configuration parameters providing business rule flexibility significantly eliminating change orders and offering quick turnaround time.</li> <li>• 100% transaction reconciliation and auditability for definable and selectable time-periods with both summary and detailed information of the reconciliation. Integrated to the accounting systems to provide General Ledger entries related to transaction activity, and provides detailed financial reporting.</li> <li>• A Transponder Management module to manage all of the tolling agency's inventory needs, starting from the issuance of a PO, receipt of shipment, customer fulfillment, handling returns, lost, stolen, damaged transponders, proactive replacement of low battery transponders and warranty returns.</li> <li>• A Document management system to store, manage and track all the inbound and outbound documentation, including version control, roll back, annotation and stamps, summarization and audit trail.</li> <li>• A tested and proven transaction processing engine that currently manages millions of transactions daily.</li> </ul> <div style="text-align: center;"> <p>One System. One Account. One Sign-on.</p> <h2>One Integrated Solution</h2> </div>		
BO-002	The Toll System Provider shall provide a complete, functioning, AET System that includes a Roadside System, BOS account management system, image review system and Customer Service Center. The BOS shall be configured and sized to support the functionality of the AET System, and shall also support account and Transaction growth at a rates of 15% per annum without any degradation in performance. The TCS shall collect revenue, accept Traffic Transactions and roadside data from the Roadside System, manage customer accounts, process images for vehicle identification, interface with numerous external systems, offer retail options for transponder sales and distribution, and provide access for toll patrons to utilize other E-ZPass toll facilities. The TCS shall be expandable to allow toll patrons to utilize other nationwide facilities in the future and perform all other functions as necessary to comply with the other Technical Requirements and other Contract Documents.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-002 , and this compliance is described below:                      The Kapsch Team's Back Office solution is part of a complete, functioning All Electronic Tolling (AET) System from roadside sensors to account management, image review, customer services and violations processing, and collections, including:</p> <ul style="list-style-type: none"> <li>• Collection, processing and posting of all toll transactions and other roadside data</li> <li>• Customer account management</li> </ul>		

		Required	Value Add
Req ID	Back office (Section BO)		
	<ul style="list-style-type: none"> <li>Image processing for vehicle identification, tolling and violations (when necessary)</li> <li>Revenue collection</li> <li>Transponder distribution and management, via walk-up centers and Joint Board approved retail options</li> <li>Interoperability with E-ZPass and other interoperable toll programs (if desired), and</li> <li>Interfacing with all external systems necessary to sustain toll operations such as the DMV, mail house service providers and merchant services.</li> </ul> <p>Our BOS is configured and sized to support the functionality of the AET System specified for this project. Furthermore, the back office employs a proven commercial, off-the-shelf customer resource management (CRM) as its database management tool that can easily and readily support account and toll transaction/traffic increases at growth rates of 15% per annum or more without any degradation in performance.</p>		
BO-003	The BO TCS shall have a transaction database, video image storage array and an interface with the Roadside System to receive Traffic Transactions. The BO TCS shall have a CSC account management system, an IVR telephone system, a web interface, a local area network provider, a video image review process, a Disaster Recovery System Plan, an auditing and reconciliation process, interfaces with the CSC, Walk Up Centers, web services, an archiving system, and extensive reporting capabilities.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-003 , and this compliance is described below:</p> <p>The Kapsch Team BOS/TCS solution provides the functionalities required including:</p>		

Req ID Back office (Section BO)

- An interface with the Roadside System to receive Traffic Transactions - The Roadside System monitors vehicle characteristics (vehicle read) the physical characteristics of a passing vehicle so it can be classified and then records an image to uniquely identify it. Tolls that are collected (toll transactions) are sent to the BOS for transaction processing to ensure **no transaction left behind** (reference RS-003 for more info)
- An enterprise class database storage system to retain and make available to the CSC all Traffic Transactions, Event Transactions, and Financial Transactions along with any respective images for Traffic Transactions.
- A CSC account management system - The advanced features of the proposed BOS solution, integrated with our telephony solution and web site, will be supported by an efficient, flexible CSC staff to make customer services, account management and video billing and violation operations very accessible and efficient. While the majority of account management activities will be performed through the CSC, with the proposed BOS Solution, customers are empowered to self-perform extensive account management functions 24 hours a day through the Web site and IVR systems.
- IVR telephone system - To meet customer desire for 24/7 service, The Kapsch Team will provide an IVR system and a feature-rich Web site. Both of these important customer interface systems will be tightly integrated with the BOS solution so that account and transaction information and management functions are readily available to customers. The solution includes security features to ensure against potential security intrusions through these portals.
- A video image review process - the image review team will review and validate all video transactions once the images have been processed by the image review system's optical character recognition (OCR) processing. The toll image processing (TIPS) system and OCR process each video image and generate license plate information and related data for verification during the image review process.
- A Disaster Recovery System Plan – The Kapsch Team has developed a standard Disaster Recovery and Business Continuation Plan for our BOS that we will submit to the Joint Board for review and approval. The document addresses the management approach and strategies for maintaining or restoring business continuity for both the system and service center operations in the event of a disaster. The plan includes, but is not limited to: Disaster Risks & Prevention; Disaster Recovery Planning; Documents & Checklists; Secondary Production Facility; Replacement Equipment; Back-ups; Disaster Declaration & Notification; Disaster Recovery Teams; Equipment Protection & Salvage; Emergency Procurement Procedures; Failover & Verification Procedures; Switchover Procedures
- An Auditing and Reconciliation process – The Kapsch Team's financial management procedures are based on results driven annual audits and are strictly monitored. These procedures are designed to provide the Joint Board with accurate and timely accounting and reconciliation of CSC operations. The Finance Management Team will be responsible for providing financial management services; including establishing required bank accounts; implementing appropriate checks and balances and standard operating procedures; interfacing with authorized Joint Board personnel for reporting and auditing purposes; revenue and expense processing; and CSC audit and reconciliation activities. The Financial Management team will include Barbara Fugler (Comptroller), Bradley Glenn

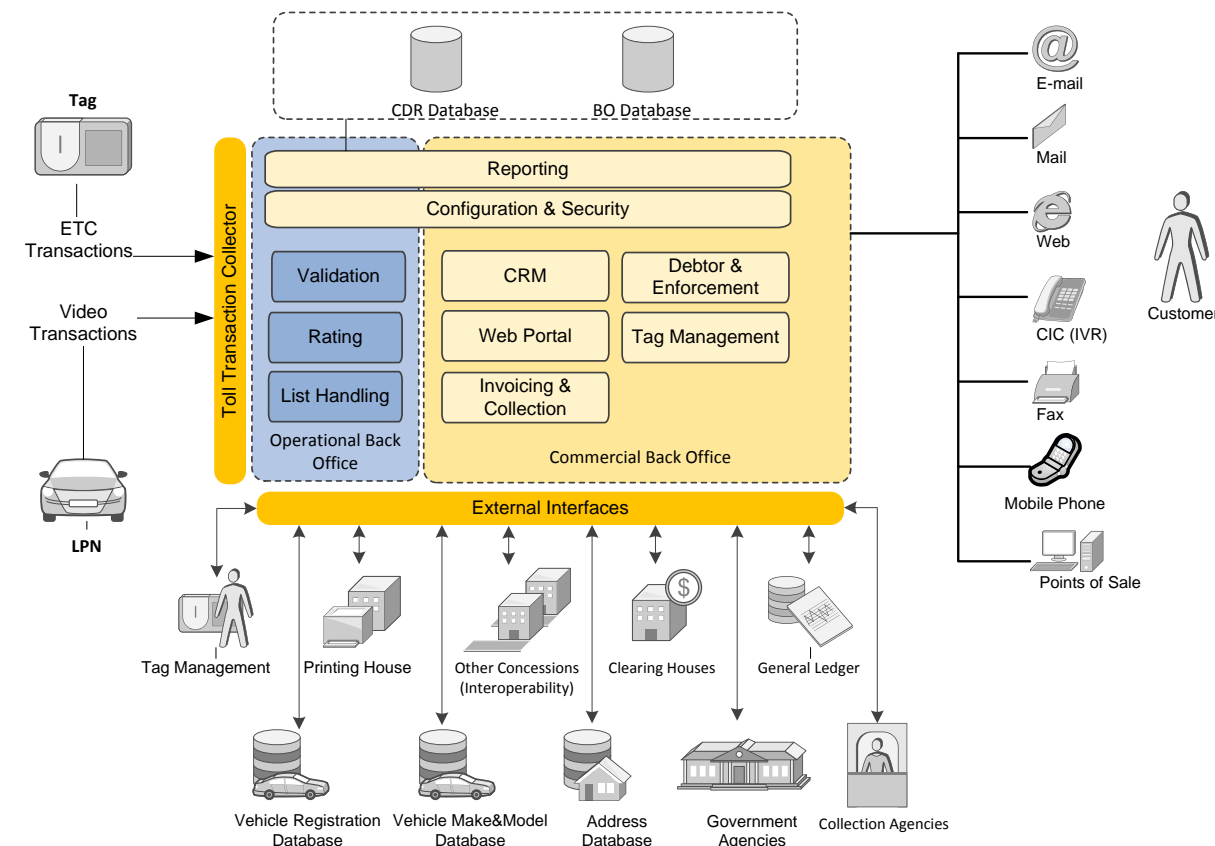


Figure 3-1 Functional Representation of the Back Office System

		Required	Value Add
Req ID	Back office (Section BO)		
	<p>(Finance Manager), an Auditor (TBD), and two Reconciliation Clerks - TBD, who will work closely with LSIORB's Revenue Control Manager in the reconciliation and audit process. Resumes for the Financial Management Team are available for review upon request.</p> <ul style="list-style-type: none"> <li>• Interfaces with the CSC - The proposed BOS solution is inherently adaptable and is designed to interface with a wide variety of internal and external systems. The Kapsch Team has carefully reviewed the interfaces discussed in the RFP. The Solution currently interfaces with multiple external systems and can easily be adapted to do so with other external programs. The Kapsch Team will develop external interfaces to systems as well as internal interfaces to the BOS solution applications. The BOS solution interfaces provide external systems access to the following: E-ZPass, Credit Card Processor (the BOS solution will provide an interface and stores a record of the credit card transaction for audit and reconciliation); Data Exchange with Host, Print Vendor – Third Party print vendor, DMV, Out of State Look Up (NLETS), Lock-box, etc.</li> <li>• Walk Up Centers – The Kapsch Team will provide and maintain two (2) full Walk-Up Centers (WUCs) to be staffed as outlined in the RFP. The Walk Up Centers will provide toll account, pay-by-mail and violation support services, including, but not limited to: Account Management Functions; Account Enrollment; Providing general information regarding toll facilities and non-toll services; a place to obtain, return or exchange a toll tag; receive Account Payments; handle Account Conversions (Account Change); Close an account; and dispute of a violation. The Kapsch Team will ensure that WUC facilities are adequately staffed to perform these services.</li> <li>• Extensive reporting capabilities. - The BOS and TCS systems provide extensive reporting related to toll transaction processing, financial processing and reconciliation, account management reporting, and event reporting. These reports include, but are not limited to: Financial Reports (Trial Balance, Profit &amp; Loss, Balance Sheet, Journal Report, General Ledger Report, Subsidiary Ledger Report; Toll Reconciliation, Aging Reports), Interoperability Reports, Operational Reports, Inventory Reports, QC Reports.</li> </ul>		
BO-004	<p>The Toll System Provider shall provide 1) account management and maintenance functions; 2) the Customer Website; 3) Transaction processing for Traffic Transactions, Financial Transaction and Event Transactions; 4) collections transaction processing and interface(s) for both current and past-due accounts; 5) DMV and rental car look-ups and interfaces; 6) functions necessary to allow authorized users to input Toll Rate Schedules into the System; 7) image review processing; 8) Transponder fulfillment functions; 9) IVR phone system for customer service use; 10) Walkup Centers and retail operations support services; 11) distribution of Transponders, reloading and replenishment services and toll and Violation payments collections and processing; 12) payment and credit card processing of Customer Statements; 13) transaction auditing and reconciliation; 14) customer contact services through phone, email, and SMS; 15) automatic generation of Customer Statements and Correspondence production and tracking; 16) operations and financial reporting; 17) remote location account services (Mobile Van ); 18) physical and logical security; 19) Hardware; and 20) disaster recovery systems.</p>	X	
	<p>Note: The functionality to support remote location account services shall be included in the Proposer's response but the design, acquisition and use of the mobile van is a Pass-Through Cost Item and shall not be included in the Proposer's response.</p> <p>Proposer Response:  Kapsch fully complies with requirement BO-004 , and this compliance is described below:  As the selected Toll System Provider, the Kapsch Team will provide the following:</p> <p>1) Account management and maintenance functions  The advanced features of the proposed BOS solution, integrated with our telephony solution and web site will be supported by an efficient, flexible CSC staff to make customer services, account management and video billing and violation operations very accessible and efficient. While the majority of account management activities will be performed through the CSC, with the proposed BOS Solution, customers are empowered to self-perform extensive account management functions 24 hours a day through the Web site and IVR systems.</p> <p>2) Customer Website  The customer website enhances the customer's interaction with the BOS by giving them the option to perform the following actions: Establish an account; review account; perform account maintenance; make a payment; request a call back; request a transponder; review Frequently Asked Questions (FAQs); report a dispute; download dispute documentation; and view account statement and/or notifications.</p>		



Req ID

Back office (Section BO)

3) Transaction Processing for Traffic Transactions, Financial Transactions and Event Transactions

The proposed BOS solution provides processing and tracking of all transactional events within the TCS. This provides the ability to reconcile to the original transaction that was created. No original transaction is modified. All changes (through corrections, reversals, and other modification events) are recorded as "change" transactions against the original transaction.

4) Collections transaction processing and interface(s) for both current and past-due accounts

The Kapsch Team will deliver a solution for comprehensive collection services. Our approach to collections includes leveraging a blend of experienced people, proven processes, and industry leading technology to deliver a high performing collections program for the Joint Board. Specifically, we have refined our collections systems and techniques to balance the seemingly conflicting objectives of persistent collection efforts with exceptional customer service. CSC agents are trained to help customers avoid repeat violation status to valid customer status. In fact, we operate in a way that ensures these objectives are never in conflict. Because our goal is to help our clients improve their programs and collect revenues earlier in the debt flow lifecycle, we are mindful of the importance of every interaction with the public. Every interaction is an opportunity to gather information, build trust, and support a customer in their efforts to pay their delinquent toll violation debt. Our collection methodology consists of: Skip Tracing; Dunning Notices; Telephone Campaigns; Toll Free Customer Service; and Multiple Payment Options. The Kapsch Team will offer installment payment plans as an option to the Joint Board's customers. Payment plans are closely managed and have become a growing part of collection efforts and industry standard practice. The Kapsch Team will work with the Joint Board to establish rules governing payment plans. The Kapsch Team has either already been interfaced to similar systems or is easily adapted to do so. The BOS solution interfaces with various external systems in support of collection transaction processing including: Credit Card Processor (the BOS solution provides an interface and stores a record of the credit card transaction for audit and reconciliation); Third Party print vendor; and Third Party vendor that provides skip tracing services.

5) DMV and Rental Car Look-ups and Interfaces

Interfaces for DMV and Rental car Look-ups are provided through various means: 1) an interface to NLETS provides access to DMVs across the country for processing out-of-state plate requests; 2) in-state plate requests can be processed through NLETS, or directly with the Indiana and Kentucky DMVs; 3) the major rental car companies are processed through existing accounts within the E-ZPass system, that are managed through PlatePass, HTA, and others; and 4) small local rental car companies can be added as fleet accounts within the system.

6) Functions necessary to allow authorized users to input Toll Rate Schedules into the System

The BOS system has a graphical interface to allow authorized users (either Joint Board or approved personnel) the ability to update the toll rates schedules, which are then send down to the Roadside for rating at the transaction level. The system is also able to interact with traffic management systems, both to provide toll rate changes and to receive continually updated traffic counts in the lanes.

7) Image review processing

Kapsch shall provide a toll image processing system (TIPS) to provide a high level of automation and accuracy in processing video tolls. The TIPS shall utilize multiple OCR engines and uses historical data to determine plate values and jurisdictions for vehicles. The TIPS shall have provisions for utilizing results from foreign OCR engines in calculating its results (typically from cameras which utilize an on-board OCR engine) to maximize automated read rates, if necessary. The TIPS shall be fully configurable to the Joint Board's requirements regarding accuracy as well as process, accommodating 'double blind' reviews or other process flows. The TIPS shall archive Images utilized for identification, so that they can be accessed for future needs such as court evidentiary packets or law enforcement identification.

8) Transponder fulfillment functions

The proposed BOS solution has a robust Tag Inventory and Management System to accurately track transponder inventory from receipt to disposal. In addition, the Operations Team has developed, deployed, and adhered to high operational standards that will be employed for distributing, tracking, and managing the

Req ID

Back office (Section BO)

transponder inventory. The BOS solution supports the processing of fulfillment requests via various fulfillment methods. Customer fulfillment requests received either directly from the customer (via web) or by CSR's (via contact center) and retail fulfillment requests can be processed. The BOS system also provides a full-featured transponder inventory management function. The system includes a predictive transponder ordering mechanism, to anticipate when to order additional inventory. Customer service staff will be trained on the proper transponder inventory management procedures. These procedures will incorporate QA standards and performance metrics that will ensure tracking and accountability for each transponder-related activity.

9) IVR phone system for customer service use

The Kapsch Team shall provide a state-of-the-art fully integrated VoIP phone system. The phone system shall be able to share all calls with the Joint Board by e-mailing an audio file of the recorded conversation upon request. The phone system shall record and store all inbound and outbound calls for a minimum of two (2) years. The IVR shall provide the following features:

- a multimedia automatic call distributor (ACD) gives the capability to manage calls, call processing, voice-mail, fax, and unified messaging to elevate productivity, performance, and customer service);
- ACD with Universal Queuing (This is a flexible automatic communications distributor for language, segment, or skills-based call routing to quickly get each call to the appropriate CSR);
- Fully Capable Inter-active Voice Response System (offers self-service options such as methods of payment to customers waiting in queue or calling after hours);
- Outbound Campaign Management (The Dialer pre-integrates to blend outbound campaign calls with inbound ACD calls. Once contact is made, the call is transferred to a CSR);
- Recording, Scoring, and Quality Monitoring (the system shall digitally record all CSR inbound and outbound calls which involve client contact. Flexible scoring helps maximize CSR performance, and simplifies recording, file management and retrieval);
- Supervision and System Monitoring (The supervisory and CSR system monitoring capabilities allow the ability to view all stats in one interface. Supervisors monitor these on several 52" flat panel displays easily visible on the CSR floor);
- Complete Workforce Management (historical ACD data is combined with projections for demand forecasts and scheduling to ensure optimal staffing, CSR performance, and CSR service..

10) Walkup Centers and retail operations support services

The Kapsch Team will provide and maintain two (2) full Walk-Up Centers (WUCs). Staffed as outlined in the RFP, they will provide toll account, pay-by-mail and violation support services, including, but not limited to: Account Management Functions; Account Enrollment; Receiving general information regarding toll facilities and non-toll services; Obtaining, returning or exchanging a toll tag; Account Payments; Account Conversions (Account Change); Closing an account; and dispute of a violation. The Kapsch Team will ensure that WUC facilities are adequately staffed to perform these services. The Kapsch Team will also support remote retail operations, allowing customers to manage changes to their accounts (make payments, obtain transponders) via an alternate channel. Currently customers have the ability to manage their accounts remotely through a retail agreement with Ace Cash Express stores nationwide, as well as pay options available through MoneyGram Western Union, and Quick Collect. The Kapsch Team is investigating alternative retail locations to be approved by the Joint Board. Specifically, Kapsch is currently in discussion with a leading provider of merchandise distribution, enabling the sale transponders and replenishment of accounts across a network of retailers. This will allow the Joint Board to establish a tiered program, over time, to expand the availability and penetration of transponders while expanding the network of replacement points, including cash. This will enable a retail program that can start locally, expand regionally, and potentially statewide throughout Kentucky and Indiana. All agreements with distribution and replacement networks will be in approval and cooperation of the Joint Board and the Marketing Firm.

11) Distribution of Transponders

Tag inventory will be maintained and stored at the CSC facility with the Operations team supporting multiple distribution channels and locations. Distribution channels include: Mail Distribution (Tag requests are received through the BOS system and funneled through the fulfillment request queues from various sources including, call center agents, website requests, IVR requests and are distributed to customers via mail); WUCs (Customers will come into the WUCs to request tags

Req ID

Back office (Section BO)

for their vehicles. These are distributed to the customer onsite); Remote Location - Mobile Van outreach program where staff acts as a "mobile storefront". Tags are distributed onsite to customers); Retail Locations (Tags are available for purchase and distribution to customers at designated retailer locations).

12) Payment and credit card processing, reloading & replenishment services and toll and violation payments collections and processing  
 The Kapsch Team believes that an effective electronic tolling program begins with having numerous ways for customers to pay. These payment options include: Internet based website for credit card and ACH payments; Integrated voice response (IVR) phone system for credit card or ACH payments; internal lockbox via check, money order, cash, credit/debit cards or ACH; Cash payments through retail location (such as Ace Cash Express). Payments will be processed per the Joint Board's business rules and in accordance with the established practices of handling funds. CSC staff will carefully trained and monitored for adherence to the Joint Board-approved Operations Plan, SOP's and performance metrics. Payments are applied to customer accounts immediately upon payment entry with the ability to apply fees for returned checks or handle other payment exceptions.

13) Transaction auditing and reconciliation  
 The Kapsch Team's financial management procedures are based on results driven annual audits and are designed to provide the Joint Board with accurate and timely accounting and reconciliation of CSC operations. The financial management team will be responsible for providing financial management services including implementing appropriate checks and balances and standard operating procedures; interfacing with authorized Joint Board personnel for reporting and auditing purposes; revenue and expense processing; and CSC audit and reconciliation activities. Within the CSC standard reconciliation procedures and system capabilities provide consistency of operations that facilitate tracking and managing toll transactions and revenues regardless of operation (call center, back office, or mailed payments). The Kapsch Team's understanding of these operations has enabled us to develop comprehensive procedures to manage, safeguard, track, and reconcile revenues that complement the inherent revenue management features of the BOS system. The Team will implement proven audit procedures to provide the Joint Board with required daily and scheduled revenue and audit reporting. In addition, measures applicable to cash, checks, the change fund, and payments via credit card will be tracked, reported, and verified on an ongoing basis. Any discrepancies or charge-backs will be documented and resolved with credit card companies, as well as reported to the Joint Board and our audit/reconciliation staff. The Team will ensure that interoperability toll transaction and revenue reconciliations are performed in accordance with interoperability agreements and the finalized Joint Board's business rules. All money handling, counting, and storage will be performed in a secure area of the CSC facility under dual control. Additionally, the Kapsch Team will establish procedures to properly address accounts payable and other vendor obligations associated with CSC operations and the CSC facility.

14) Customer contact services through phone, e-mail, and SMS  
 Leveraging our successful experience of the CTRMA Project, the Kapsch Team has carefully designed and is proposing full-featured BOS and IVR systems to support the Joint Board's customer communications in a prompt, efficient, and professional manner. These systems will be supported by proven Call Management SOPs tailored to the Joint Board's requirements. To maintain high levels of customer service, the CSC management team will actively monitor call volume statistics and proactively train and reinforce staff to meet or exceed the Joint Board's CSC performance goals. Contact channels available to the Joint Board's customers are:

- Phone
- providing customers 24/7 access to a toll-free automated Interactive Voice Response (IVR) phone system
- via customer service representatives providing support services during the agreed upon hours of operations
- E-mail (Dedicated operation support staff are available to respond to customer inquiries/requests submitted via e-mail);
- SMS (customer account alerts are sent through SMS messaging)
- **Live Chat (the BOS system provides for chat functionality - Live Agent is fully integrated to the BOS system allowing agents to chat with live customers);**

15) Automatic generation of Customer Statements and Correspondence production and tracking  
 The Kapsch Team has developed specific procedures to handle incoming and outgoing mail, including faxes, to ensure that mail is managed responsibly. The mail will be opened, sorted by work type, and batched under dual-control (two staff members present at all times) and routed in accordance with SOPs. Controls will be in

Req ID

Back office (Section BO)

place to track work-batch types and custody of payments will be tracked through employee signatures at each transfer point in the process. These procedures will ensure the security of the Joint Board's funds received by the CSC. Customer-related correspondence will be scanned according to documentation security and integrity procedures. The scanned document will be identified with a specific customer or violation account; and as such will be retrievable at any time. After confirmation of the successful scan of the document, the paper document will be archived or disposed of in accordance with the Joint Board's business and retention rules. In addition, procedures will be in place to handle and record outgoing mail. The SOPs developed for the CSC mailroom will be submitted to the Joint Board for its review and approval. Changes to the procedures will also be shared with the Joint Board for review and approval. The Kapsch Team plans to employ a mail-house service, to ensure the high-volume of mail is handled with the timeliness and professional care required for sensitive customer communications. The Kapsch Team shall have the mail-house process customer invoices, violation notices, customer statements, and similar high-volume standardized mailings. This service shall meet the rigorous security requirements of the RFP. The Kapsch Team will also provide specific in-house mailing equipment required for administrative use and/or home-agency transponder mailings.

16) Operations and financial reporting

The proposed BOS solution we will deliver to LSIORB is provided with an extensive array of reports providing essential visibility into the CSC operations and the activity and status of accounts. These reports have been demonstrated as effective administrative tools by other toll authority customers that use them for monitoring and managing their operations. BOS reports include a wide range of revenue and reconciliation reports and CSR and account activity reports. In addition, the IVR/telephony system (Interactive Agent) provides real time reporting of all contact center activities, including queues, skills, teams, groups, and more. Using a browser-based interface, supervisors and administrators can view the data they need from any location. The platform also maintains historical data of all call-related and agent-related events in the system to provide historical reports, which can be viewed and filtered in numerous ways. Additionally, the database schema is open, enabling customers to create custom reports using standard report generation tools. The proposed BOS solution is further equipped with a full-suite of violations reports designed to monitor, manage, enforce and reconcile violation processing and enforcement activities, including detailed and summary reports for violations and citations, as well as enforcement activities such as court action reports. Occasionally, Joint Board staff may require assistance to create or gather pertinent information from which to write an ad-hoc report. Such support can be requested and serviced via the helpdesk during the Kapsch Team normal business hours.

17) Remote location account services (Mobile Van)

The CSC Operations staff will support remote location account services (Mobile Van) initiatives designed as an outreach mechanism to give the program visibility, promote toll road usage, and educate the public about new toll roads and offer remote, mobile CSC services. The CSC staff will coordinate and conduct events. Events will be identified and organized by Joint Board staff and CSC staff will organize for the event and support the event by ensuring that all materials, tag kits, set-up equipment is available and ready on the day of the event. CSC staff will be available to support the event regardless of the location or duration of the event and will prepare for events in duration of 10-12 hours including set-up and tear down. Event activities will consist of event preparation; set-up and tear down; account enrollment; transponder distribution; dissemination of promotional materials; responding to inquires related to the program/project. The Kapsch Team will ensure that events are staffed appropriately, depending on size (anticipated attendance) and type of event and will ensure that at a minimum a CSR and Supervisor will be available for each event.

18) Physical and logical security

The Kapsch Team understands that it is responsible for the physical security of the facility, WUCs and property and will provide them with a security access system as well as provide for additionally secured areas for protection of valuable assets, including server rooms, transponder rooms and storage rooms. Working closely with the Joint Board, SOPs will be developed that clearly outline security procedures for the facility. Only authorized operations and maintenance staff, with badges configured in the system, will be allowed to access the CSC and WUC facilities and only to areas authorized to them based on their project position or role. The access control system will enable authorized personnel to adjust access privileges as required for efficient operations and security requirements. The computer/server room(s) will include environmental controls to meet system requirements. Access to areas throughout the facility will be given to contact center personnel via security badges that are swiped over security panels at entry doors. Additionally, the CSC Management Team understands the critical importance of safeguarding customer data and takes a very serious and holistic approach that incorporates both system and human resources to ensure the security of sensitive

		Required	Value Add
<b>Req ID</b>	<b>Back office (Section BO)</b>		
	<p>information. Protection of customer privacy is paramount to our team. Emphasis is placed on the security and safeguarding of customer information from day one. The employee training program contains a customer data security section as part of the Service Center Overview, to make certain that CSRs are fully knowledgeable. Lastly, the proposed BOS solution uses a multi-tiered security system to guard against intrusion from human or electronic threats. Access to all system resources will be governed by security protocols and operating system parameters are used to limit access to hardware and networking components. All software components will be configured to limit or grant access to authorized personnel and all access is password controlled. Within the BOS application all access is controlled from the application layer via role-driven access. Additionally, the system recently passed its annual full Payment Card Industry (PCI) audit and is certified PCI Level II compliant. Additionally, quarterly PCI scans are conducted and are successful.</p> <p>19) Hardware The Kapsch Team will provide all infrastructures required for the CSC and WUCs, including phone systems, computers and other hardware/software requirements. Software and hardware issues will be identified through existing monitoring functions. Depending on the nature of the problem, the issue will be addressed by the appropriate maintenance staff person. If the issue is software related, a solution will be coordinated with the software support team. For hardware support, the maintenance technician will work to identify and remediate the problem in accordance with Service Level Agreements.</p> <p>20) Disaster recovery systems Our Disaster Recovery and Business Continuation Plan for our BOS will be tailored and submitted to the Joint Board for review and approval. The document addresses the management approach and strategies for maintaining or restoring business continuity for both the system and service center operations in the event of a disaster. The plan includes, but is not limited to: Disaster Risks &amp; Prevention; Disaster Recovery Planning; Documents &amp; Checklists; Secondary Production Facility; Replacement Equipment; Back-ups; Disaster Declaration &amp; Notification; Disaster Recovery Teams; Activation of Disaster Recovery Plan; Equipment Protection &amp; Salvage; Damage Assessment; Emergency Procurement Procedures; Failover &amp; Verification Procedures; Switchover Procedures. Additionally, disaster recovery procedures will be included in the Standard Operating Procedures (SOPs) for CSC Operations addressing declaration and notification procedures, and facility specific procedures in addressing various emergency scenarios. The Kapsch Team takes the responsibility for operating a safe and secure work environment very seriously. The staff and subcontractors will be required to provide continuity of service, even during emergencies, such as fire, accident and rescue operations, strikes, civil disturbances, natural disasters and military contingency operations.</p>		
BO-005	The Toll System Provider shall provide functionality for mobile operations (off site, not only Walk-Up Centers and retail operations, but mobile van services) for account setup, account management, retail distribution of Transponders and for retail operations. However, the System shall support the use of a mobile van in order to meet this requirement. The mobile van shall be a Pass-Through Cost Item if required by the Joint Board.	X	
	<p><b>Note:</b> The mobile van and all associated costs to outfit the mobile van shall not be included in this Technical Response Form, but Proposer shall indicate in this Technical Response Form how the proposed System shall support the use of a mobile van in order to meet this requirement.</p> <p>Proposer Response: Kapsch fully complies with requirement BO-005 , and this compliance is described below:</p>		

Req ID	Back office (Section BO)		
	<p>The CSC Operations staff support remote location account services (Mobile Van) initiatives designed as an outreach mechanism to give the program visibility promote toll road usage, and educate the public about new toll roads and offer remote, mobile CSC services. The CSC staff will coordinate and conduct events. Events will be identified and organized by Joint Board staff, and CSC staff will organize for the event and support the event by ensuring that all materials, tag kits, set-up equipment is available and ready on the day of the event. CSC staff will be available to support the event regardless of the location or duration of the event and will prepare for events in duration of 10-12 hours including set-up and teardown. Event activities will consist of, but are not limited to: event preparation; set-up and teardown; account enrollment; transponder distribution; dissemination of promotional materials; responding to inquires related to the program. The Kapsch Team will ensure that events are staffed appropriately, depending on size (anticipated attendance) and event and will ensure that at a minimum of one-CSR and Supervisor will be available for each event.</p> <p>For this proposal, the Kapsch Team intends to utilize the mobile van primarily for the promotion and sales of transponders for use. The van is multi-purposed as a marketing front for events or as a stand-alone facility to distribute transponders and initiate accounts.</p> <p>In both instances, agents staff the event per anticipated traffic and inventory is issued to the van prior to the event. Wireless access to the CRM interface of the TCS will allow the agents to establish accounts, issue transponders and collect credit card information for the account as well as accept cash. In cases where cash is accepted, regular courier pickups will be scheduled due to the unsecure nature of the van to limit the amount of cash on hand.</p>		
BO-006	<p>The Toll System Provider shall provide typical account services including making adjustments to accounts, changing Toll Rate Schedules, processing refunds, handling Violations, closing accounts, denoting customer contact and documenting those contacts, and offering account statements through print, email, and the Customer Service Website.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-006 , and this compliance is described below:</p> <p>The advanced features of the proposed BOS solution, integrated with our telephony solution and web site, will be supported by an efficient, flexible CSC staff to make customer services, account management and video billing and violation operations very accessible and efficient. While the majority of account management activities will be performed through the CSC, with the proposed BOS Solution, customers are empowered to self-perform extensive account management functions 24 hours a day through the Web site and IVR systems. The account management functions that are processed using the BOS solution includes, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Account Creation &amp; Maintenance: CSC operations staff and the BOS system will support account creation and maintenance activities, allowing customers to open and manage changes to their account via all contact channels (i.e. web, IVR, phone, fax, mail, e-mail, and/or in person).</li> <li>• Account Merge: CSC operations staff and the BOS system will support the merging of accounts, allowing customers to merge multiple accounts into a single account for management/maintenance purposes.</li> <li>• Account Activity: BOS systems and operations will support account activity procedures and notifications, including such events as negative balance, replenishment failure, and lost or stolen transponders as defined by the Joint Board's business rules and operating procedures.</li> <li>• Account Closing: Patrons will be able to close their accounts via the same channels available to open accounts. As part of standard account-closing procedure, the reason for closing an account will be tracked in order to monitor satisfaction levels and to provide any trend analysis that might arise. CSR staff will be trained to follow proven procedures that ensure required adjustments are made prior to closing an account and processing any refunds. This may involve procedures relating to posting of interoperable, home agency or video-based transactions. Account closures and refunds will be processed in a manner consistent with the Joint Board's business rules.</li> <li>• Refunds: refunds can be requested, tracked and issued through the BOS system, using the last replenishment method on the account, or in the event that the replenishment method is no longer valid, in the form of a check, per Joint Board approved business rules.</li> </ul>		



Figure 3-2 Existing TxTag Mobile Trailer

		Required	Value Add
Req ID	Back office (Section BO)		
	<ul style="list-style-type: none"> <li>• <b>Escheatment:</b> CSC staff and system will allow for the identification and processing of accounts eligible for escheatment, based on escheatment schedule that is outlined by the Kentucky State Treasury and/or the Indiana Attorney General's office, or as otherwise approved by the Joint Board.</li> <li>• <b>Bankruptcy:</b> The CSC system will maintain all bankruptcy information on the customer's account and allow bankruptcy status/write-off at the transaction level. Designated CSC staff will notify the Joint Board within three business days of receipt of bankruptcy information and recall all transactions related to a documented bankruptcy from the toll violation collections process.</li> <li>• <b>Account Notes:</b> All account accesses and any transactions performed on an account (whether by the customer themselves or by a CSR) will be recorded in the account history. The system will record all account activity automatically with the appropriate description and time stamp. CSRs will be able to annotate customer issues or comments to account history with manual account notes.</li> <li>• <b>Account Status Changes:</b> Full-service account management capabilities will be provided to the customer via the store front, Web site, IVR, mail, e-mail, fax, and phone to manage account status changes such as payment type. Other account status changes (such as negative balance) will be handled per the Joint Board's business rules.</li> <li>• <b>Account Alarms:</b> Account Activity Statements will be sent electronically or via paper through the mail. Account activity will be available for monthly periods. Customers will also be able to access account history and statements via the Website.</li> <li>• <b>Account Adjustments.</b> The BOS system will allow an authorized user to reverse tolls, fees and payment transactions; add toll transactions; revise toll transactions due to vehicle classification corrections; or transfer transactions from one account to another.</li> <li>• <b>Customer Disputes.</b> CSC staff will be well trained and continually monitored for professional, courteous resolution of disputes. Staff members will be given procedures (based on the Joint Board business rules) to handle a wide range of inquiries and potential issues that may arise, including the point to elevate a situation to the Supervisor or Manager. Inquiries/ disputes for customer accounts or violation activities will be logged and tracked to resolution. The number and types of issues will be part of regular reporting to the Joint Board.</li> <li>• <b>Account Statements.</b> The BOS provides for the ability to provide account statements through print, e-mail, and the customer website. The choice of print or e-mail is a customer choice. All statements (for historical purposes) will also be available through the customer website on demand.</li> </ul> <p>The Toll Collection System provides an interface, for authorized users, to access the Toll Rate Schedule Management and Maintenance Subsystem allowing changes to the toll rate structure and schedules. Toll Rate Schedules are parameter driven and can be instituted immediately, in a future time or by a future date/time combination. The Toll Rate Structure allows individual access point changes or blanket structure changes. The Maintenance functionality includes monitoring and diagnostics capability, ensures that the static signs in advance of each access point are updated appropriately for driver notification, each toll point is accurately rating transactions along with a comprehensive and consolidated audit trail that accurately identifies all change activities, including the agent of any change.</p>		
BO-007	The TCS shall have the ability to search, look-up and find customer accounts using numerous fields including customer name, account number, Transponder number, and address.	X	
	<p>Proposer Response: Kapsch fully complies with requirement BO-007 , and this compliance is described below:</p> <p>The BOS system captures the following account information as part of the CSC module:</p> <ul style="list-style-type: none"> <li>• <b>Account Number:</b> The account number is generated and assigned to the customer at the time the account is created.</li> <li>• <b>Personal Information:</b> Personal Information contains First name, Middle name, Last name. For a business account, the business name is mandatory</li> <li>• <b>Address Information:</b> Address Information contains Address1, Address2, City, State, Country, and Zip Code. By default, system saves the address type as "PRIMARY. Add and edit/delete operations can be performed on the address information.</li> <li>• <b>Phone Number:</b> The Phone Number is part of the account record. When a call comes in through the IVR/ACD system, it is capture and can be used to pull up account information for the CSR.</li> <li>• <b>Vehicle Information:</b> Vehicle should contain vehicle license plate number, country, state, Make, Model, Year, Color, type. While adding the vehicle, the System will check to ensure the license plate number is unique across the system. If user type is individual, system will accept up to 5 vehicles.</li> </ul>		

		Required	Value Add
Req ID	Back office (Section BO)		
	<ul style="list-style-type: none"> <li>Transponder ID: The transponder ID number is associated with the customer's account at the time that the transponder is assigned to the customer.</li> </ul> <p>The customer's account is located in the BOS system by performing a search on any of the account information listed above. To find, look-up, or search for a customer's account in the BOS system can be accomplished by entering account information including by name, account number, transponder number and the customer address or phone number.</p> <p>Additionally, Kapsch shall provide a CRM interface to the TCS can automatically present accounts to the agent based on information provided or entered into the IVR (account number or phone number). <b>Through this IVR feature, the customer service representative will know whether the customer is from Indiana or Kentucky and specifically tailor their approach to the specific needs of each state</b>, if required by the Joint Board.</p>		
BO-008	The TCS shall be able to replenish an account through the use of a credit card, at retail distribution outlets and through the use of cash or credit card at Walk-Up Centers. The TCS shall have a methodology to identify lost or stolen Transponders when a Traffic Transaction occurs using a lost or stolen Transponder.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-008 , and this compliance is described below:</p> <p>The Kapsch Team believes that an effective electronic tolling program begins with having numerous ways for customers to pay. The payment options include: Internet based website for credit card and ACH payments; Integrated voice response (IVR) phone system for credit card or ACH payments; internal lockbox via check, money order, cash, credit/debit cards or ACH; Cash payments through retail location (such as Ace Cash Express).. Payments will be handled per the Joint Board's business rules and in accordance with the established practices of handling funds. CSC staff will carefully trained and monitored for adherence to the Joint Board-approved Operations Plan, SOP's and performance metrics. Payments are applied to customer accounts immediately upon payment entry with the ability to apply fees for returned checks or handle other payment exceptions.</p> <p>Transponders will be recorded in the TCS as lost or stolen when formally reported by a patron. Patrons are able to report via phone, allowing the CSRs to verify their identity based on account information, or customer site where patron uses his or her login information. Similarly, plates will be recorded in the TCS as lost or stolen when formally reported as such by a patron whose identity has been verified. Patrons will be encouraged to file a police report and provide a copy to the TSP so the report number can be included in the annotations for the account. The lost or stolen status for an account will be known to CSRs when calling up information on that account and the Web site will prevent an account for a lost or stolen transponder or plate from being replenished. A Standard Operating Procedure will be established in consultation with the ORB to ensure CSRs are consistent in how they handle requests to declare an account lost or stolen, and requests to return the account to active status.</p> <p>Transponder status information is provided to the roadside at regular intervals including lost, stolen, or otherwise invalid. The roadside is provided with information about the lost/stolen transponders so that transactions can be processed as video transactions, and be processed properly by the BOS. These transaction records are recorded for any additional processing or reporting as necessary per enforcement requests or other legal frameworks established by the Joint Board.</p>		
BO-009	It is desired that the Toll System Provider provide a smart phone application for customer account management and account replenishment services.		X
	<p>Proposer Response:</p> <p><b>Kapsch implements Value-Add BO-009, and this compliance is described below:</b></p> <p>Kapsch shall provide a smart phone application for customer account management and account replenishment services. Kapsch shall provide mobile users with the ability to access the customer website in both of the following ways</p> <ol style="list-style-type: none"> <li>The customer web site will be designed to be responsive. This will allow for the recognition of the device accessing the site (by browser, by device) and the adjustment of the user experience to the device (desktop, iPad, iPhone, Android device). This will provide full access to the customer site to facilitate customer sign-ups, management of the account, payments, and other account functions.</li> <li>The second option will be the provision of a mobile app for the Apple IOS environment and the Android environment. The application will provide the ability to manage a customer's account – open an account, pay a one-time toll, make an account payment, add/remove vehicles, request transponders/report transponders missing, update account information, and provide basic toll information – location and rates.</li> </ol>		
BO-010	The Toll System Provider shall provide a TCS that assigns static toll rates to Transactions from the roadway based upon the latest Toll Rate Schedule or discounts	X	



		Required	Value Add
Req ID	Back office (Section BO)		
	established by the Joint Board.		
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-010 , and this compliance is described below:  The TCS provides a user interface that allows for the management and maintenance of toll rate schedules. Rates may be changed, in advance, and scheduled for deployment at a later date. The interface will also allow for the suspension of tolls in emergency conditions.  The BOS system ensures that the tolls, in effect at the time of the transaction, are applied properly and recorded, along with a comprehensive and consolidated audit trail that accurately identifies all change activities, including the agent of any change. Reconciliation reports provide a means of verification and validation. Discount schedules will be applied to the transactions and/or accounts, based on the business rules in effect, and approved.</p>		
BO-011	The Toll Rate Schedules shall be transmitted electronically and updated as approved by the Joint Board. Toll Rate Schedules shall be utilized to establish the numerous toll rates to be assigned based on type of Traffic Transaction (ETC or pay by plate (pre-or post-registered)), vehicle classification, and discounts or promotions.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-011 , and this compliance is described below:  The TCS provides a user interface that allows for the management and maintenance of toll rate schedules. Rates may be changed, in advance, and scheduled for deployment at a later date. The interface will also allow for the suspension of tolls in emergency conditions. Any changes to the toll rates, can be applied immediately or at a later scheduled date, and will be updated electronically.</p>		
BO-012	It is desired that the TCS provide functionality to support variable rates provided by an external system.		X
	<p><b>Note:</b> The availability of this functionality will not be a condition to commencement of Revenue Service.</p> <p>Proposer Response:  <b>Kapsch implements Value-Add BO-012, and this compliance is described below:</b>  Kapsch fully recognizes that the Joint Board may require more efficient use of the existing lane capacity to improve traffic flow and travel times by introducing the concept of dynamic pricing. The Kapsch solution supports a dynamic pricing option and will collaborate with the Joint Board to deliver a dynamic pricing system consistent with the Business Rules and Operational Plans of the bridges. The BOS Toll Rate tables are maintained in the database. The tables defined in the database schema shall allow for the entry of new toll rates, with the proper application security, by an external program (within the toll network) such as a Dynamic Pricing Engine rather than a manual web-based interface.</p>		
BO-013	The TCS shall store and link electronic copies of any inbound or outbound Correspondence to an account, including all types of mail, email, regular mail, fax, etc. and the Correspondence shall be visually available to the CSRs. Hard copy Correspondence shall be scanned and converted to a viewable electronic file for storage in the TCS. The TCS shall provide sufficient archiving capabilities for Correspondence associated with each customer account.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-013 , and this compliance is described below:  The Kapsch Team has specific procedures to handle incoming and outgoing mail, including faxes, responsibly. Through the Salesforce Customer Relationship Management System all copies of all incoming and outgoing correspondence are linked to the customer's account as notes in the account notes, and are stored and online available to the CSRs to review and or re-send to customer as needed.  For incoming mail, the mail is securely opened, sorted by work type, and batched under dual-control (two-staff members present at all times) and routed in accordance with SOPs. Controls will be in place to track work-batch types and custody of payments will be tracked through employee signatures at each transfer point in the process. Customer-related correspondence will be scanned according to documentation security and integrity procedures. The scanned document identifies with, and is linked to, a specific customer or violation account, and as such is retrievable at any time whether archived or not.</p>		
BO-014	The TCS shall generate automated notices, letters and communications by regular mail, text messages, fax and e-mail. The Toll System Provider shall provide automated notices, one-time notices, bulk mail notices or individual notices for any Correspondence related to Toll System Provider and TCS operations. This function shall be configurable and shall allow management to prevent any type of notice from being processed automatically. The TCS shall provide functionality to process and send bulk mail Correspondence resulting from notices and general Correspondence. TSP shall provide such notices as are required by the approved	X	

		Required	Value Add
Req ID	Back office (Section BO)		
	Business Rules.		
	<p>Proposer Response:  Kapsch fully complies with requirement BO-014 , and this compliance is described below:  The BOS solution generates automated notices, letters and communications by regular mail, e-mail, and/or SMS messages. This function is configurable and automated. Notices are sent depending upon the preference that the customer indicates at the time of account creation. This preference is captured in the BOS system. Systems and processes are in place to monitor operations to ensure transaction processes, file transfers, status updates, account management functions are being performed in an accurate and timely manner, and this includes controls to ensure notice generation and distribution.  With the approval of The Joint Board, Kapsch will employ the services of a supplier of mail-house services, to ensure the Joint Board's high-volume mail is handled with the timeliness and professional care required for sensitive customer communications. The mail house will handle customer invoices, violation notices, customer statements, and similar high-volume standardized mailings. The Kapsch Team will also provide specific in-house mailing equipment required for administrative use and or home-agency transponder mailings.</p>		
BO-015	The Toll System Provider shall provide a BOS account management system that provides customer service channels by phone, web and an Interactive Voice Response system.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement BO-015 , and this compliance is described below:  Leveraging our successful experience of the CTRMA Project, the Kapsch Team will deliver a full-featured BOS and IVR systems to support the Joint Board's customer communications in a prompt, efficient, and professional manner. These systems will be supported by proven Call Management SOPs adapted and tailored to the Joint Board's requirements. To maintain high levels of customer service, the CSC management team will actively monitor call volume statistics, and proactively train and reinforce staff to meet or exceed the Joint Board's CSC performance goals. Contact channels available to the Joint Board's customers are: Phone (provided to customers 24/7 with access to a toll-free automated Interactive Voice Response (IVR) phone system for payment and customer support services and information. Additionally, The Kapsch Team will offer person-to-person customer service support during the all hours of operations); E-mail (Dedicated operation support staff are available to respond to customer inquiries/requests submitted via e-mail); <b>Live Chat (the BOS system provides for chat functionality - Live Agent is fully integrated to the BOS system allowing agents to chat with live customers)</b>; and SMS (customer account alerts are sent through SMS messaging).</p>		
BO-016	The Toll System Provider shall provide a BOS that offers a simple, intuitive process for establishing accounts and managing and modifying those accounts through the Customer Website, through the help of a CSR by phone, through retail distribution outlets, through mail received at the CSC, or through the help of a CSR at a Walk-Up Center. The TCS shall provide an efficient and user friendly platform for CSRs to optimize their time in establishing and helping customers to manage their accounts.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement BO-016 , and this compliance is described below:  Kapsch shall utilize established relationships with Ace Cash Express, Wal-Mart, Western Union, and MoneyGram retail locations. The BOS shall provide multiple methods of establishing and managing customer accounts, including:</p> <ul style="list-style-type: none"> <li>• Customers can open accounts directly without assistance through the customer website either via desktop or by mobile devices;</li> <li>• Customers can call the Customer Service Center and speak with a CSR;</li> <li>• At the Walk Up Centers, customers can get face to face assistance from a CSR;</li> <li>• Customers can also mail, fax, or e-mail a paper application to the CSC; and</li> <li>• Customers can purchase a tag at the Walk Up Center, and the Kapsch Team shall make best efforts to provide at least one other retail location approved by the Joint Board for tag distribution at all times during the TCS Operations and Maintenance Term.</li> </ul> <p>Kapsch understands that the right customer relationship management system, staffing excellence, and an intuitive website are the foundation for a positive customer experience. Just as a well-designed website ensures customer satisfaction by providing an effortless interface for the users, a well-designed CRM system allows the</p>		

		Required	Value Add
<b>Req ID</b>	<b>Back office (Section BO)</b>		
	customer service representative to assist customers efficiently and effectively. Ongoing account management is accessed through the customer website (via desktop or mobile device), the services of the IVR system, talking with a CSR, queries through Live Chat or SMS, visiting a Walk Up Center, and through e-mail and a mobile application for IOS and Android devices is available.		
BO-017	The Toll System Provider shall provide a BOS that can provide a resident, commuter and/or local plan. This functionality shall allow eligible customers, as determined by the Joint Board, to have a percentage or fixed dollar amount reduction in their tolls each month after a configurable number of trips on a Bridge. This functionality shall have the ability to reduce toll rates from 0% to 100% tolls for eligible account holders. The functionality shall also include the capability to charge a fixed fee per month, quarter or year for unlimited use of each Bridge and aggregated to all Bridges.	X	
	Note: This functionality may or may not be used but would allow eligible customers, as determined by the Joint Board, to have a percentage or fixed dollar amount reduction in their tolls each month after a configurable number of passages. The Proposer shall describe in this Technical Response Form existing functionality in its TCS that provides for resident/commuter plans.  Proposer Response: Kapsch fully complies with requirement BO-017 , and this compliance is described below: The BOS solution is functionally able to support a resident, commuter, and/or local plan, allowing eligible customers a discounted rate on tolls based on usage. This reduction in tolls can be established as either a discounted amount per toll or as a percentage discount of the total toll amount due each month. This is part of the discount plan scheme that is available in the BOS. The BOS Solution also allows for payment of a fixed fee permitting unlimited use, per Joint Board business rules, of the LSIORB system, in month, quarter, or year timings. It is understood that criteria for thresholds to participate in the resident, commuter, and/or local plan will be reviewed and approved by the Joint Board, and become part of the Business Rules. These plans will then be coordinated with the Joint Board's marketing firm to best present the availability for these plans and provide sign-up capability through the customer website. In order to maintain traceability that facilitates reconciliation, all discounts are recorded as additional data posted to the account, such that the an audit or GL account will show the scheduled toll rate totals, the indicated (or discounted) toll rate totals and the totals of all discounts applied based on account commuter plans and other discount systems.		
BO-018	The TCS shall provide functionality to transfer an account from one account owner to another account owner using an affidavit process.	X	
	Note: The Proposer shall describe in this Technical Response Form its transferrable account capabilities, its affidavit system function and operations processes.  Proposer Response: Kapsch fully complies with requirement BO-018 , and this compliance is described below: The registered owner of the motor vehicle involved in a toll transaction and/or violation is responsible for payment of the amount, in addition to any additional amounts/fees that are imposed. If an owner establishes that, at the time of the toll transaction, the motor vehicle was in the care, custody, or control of another person business rules shall be followed to ensure proper allocation of a toll transaction. In these instances, the process in place is to have a customer submit a dispute form/affidavit to initiate a dispute request. An invoice or transaction dispute request must be made within 90 days of the toll transaction. A request for a dispute form may be made in writing, in person, or by telephone. All disputes are subject to review and approval by the Joint Board and may require additional documentation or evidence from the customer. Once the dispute is reviewed the customer is notified of the decision and appropriate action is taken regarding them. The actions may be payment for one or more transaction, converting them to a customer, transferring the violation to some other account, adding comments for a particular toll transaction, viewing an image, and viewing details for a particular violation. The BOS system supports the transfer of toll transactions/violations from one account to another and conversion of violations.		
BO-019	It is desired that the transfer of account ownership be accomplished through an automated process to the extent possible.		X
	Proposer Response: <b>Kapsch implements Value-Add BO-019, and this compliance is described below:</b> Kapsch shall provide for the transfer of account ownership through an automated system process. Kapsch staff (with access permissions to this functionality) shall		

		Required	Value Add
Req ID	Back office (Section BO)		
	input the information about the new customer from the paperwork provided for new accounts. The TCS shall transfer the affected transactions previously marked automatically.		
BO-020	The TCS shall provide functionality for rental car Traffic Transactions accepted within the E-ZPass system.	X	
	<p>Proposer Response: Kapsch fully complies with requirement BO-020 , and this compliance is described below:</p> <p>Transactions for rental cars are currently handled through the E-ZPass Interoperability file exchange. The major rental car companies have already established accounts with E-ZPass agencies that record their vehicles and their transponders. These accounts are managed by third-party firms (PlatePass, HTA, etc.). Any transactions that are captured from registered rental cars will be handled in the same manner as any other user of the E-ZPass system. The transaction captures the tag number and/or the license plate information. This information is matched to the list provided from the other E-ZPass agencies, and then the transaction is sent, for payment, to the appropriate E-ZPass agency holding the account. All reconciliation and exchange of funds is handled in accordance with the E-ZPass Interoperability specifications and Operating Agreement.</p> <p>If a car is rented or leased that is outside of the E-ZPass agency domain, then the TCS will accept documentation regarding the lessor and update the affected transactions accordingly in order to pursue the collection of the tolls incurred. See BO-021.</p>		
BO-021	It is desired that the TCS provide functionality to process and collect revenue for rental or leased cars outside of those collected in the E-ZPass system.		X
	<p>Proposer Response: <b>Kapsch implements Value-Add BO-021, and this compliance is described below:</b></p> <p>The system is currently capable of interfacing with any rental car agency or third-party service providers for identification of rental and leased cars outside of the E-ZPass system. For efficiency in processing, Kapsch and the Joint Board would need to work together to develop agreements with these third party service providers (e.g. 1) through initial marketing and account sign-ups, the cars will be captured as part of the account establishment for the firms/individuals with the vehicles; and 2) during the day-to-day operation of the system, as vehicle license plates are captured and invoiced, an outreach process, coordinated with the marketing firm, will endeavor to sign up the rental/lease car holders to bring them into the customer account system.)</p> <p><b>Additional revenue opportunities exist for other applications (e.g. airports, municipal parking) that would utilize the LSIORB transponder and system.</b></p>		
BO-022	It is desired that the TCS provide functionality to allow a customer to open a temporary unregistered license plate account that is configured for up to XX days where the days are from 0 to 99 days.		X
	<p>Proposer Response: <b>Kapsch implements Value-Add BO-022, and this compliance is described below:</b></p> <p>The Kapsch system currently allows customers to open temporary unregistered license plate accounts. If indicated by the Joint Board, Kapsch shall provide a "Day Pass" system within the BOS and customer website which is consistent with Business Rules established by the Joint Board. The "Day Pass" system shall allow for the purchase of a single- or multi-day pass. Upon purchase of the Day pass, the user shall be required to provide License Plate and Payment information. The Day Pass accounts can be implemented as a first-use starts the clock, or as an individual day system.</p>		
BO-023	The TCS shall provide a configurable minimum balance to open an account. The minimum balance shall be configurable by account type (e.g. ETC, registered license plate, commercial, government) and once configured shall allow CSR supervisors to override the minimum balance requirement for individual accounts where necessary. The required minimum balances shall be subject to Joint Board approval.	X	
	<p>Proposer Response: Kapsch fully complies with requirement BO-023 , and this compliance is described below: The BOS system provides for a minimum initial balance to open an account. This balance is calculated based on account type, number of vehicles and vehicle types, and number of proposed monthly trips (as entered at account establishment). The minimum will be set in accordance with the Business Rules that are</p>		

		Required	Value Add
Req ID	Back office (Section BO)		
	established at the time of account creation. The BOS also allows CSR supervisors, with the appropriate access level) to adjust the minimums based on established SOPs which have been agreed to with the Joint Board.		
BO-024	The TCS shall allow accounts to be converted from one account type to another account type. The TCS shall update the Toll Rate Schedules for the new toll account when the conversion occurs in accordance with the Business Rules.	X	
	Note: The Proposer shall describe which account types can be converted in its Technical Response Form.  Proposer Response: Kapsch fully complies with requirement BO-024 , and this compliance is described below: The account types available in the BOS system include: Pre-Paid transponder, Pre-Paid video ("Day Pass"), UnPaid transponder, UnPaid video (violations), and 3rd party funded accounts (such as E-ZPass). The BOS system allows for the conversion of accounts through the modification of the account type. Due to the "One Account" design, the ability to change the account type is done automatically (e.g. a replenishment method on a Pre-Paid transponder account), or through a drop-down menu selection available to the CSR, or through the satisfaction of certain requirements by the customer (bringing a former Pre-Paid transponder account back into Pre-Paid transponder status after falling into UnPaid transponder status, for example). Once the account has been change to a new account type, the BOS will automatically apply all Business Rules in effect for that account type such as: minimum balance requirements, automated balance replenishments and notifications, tag deposit requirements, any discount plans in effect for that account type, etc. In addition, if an account is being changed from an UnPaid video (violation) account to a customer Pre-Paid transponder account, the BOS system business rules will also ensure that enough funds have been collected to pay off or bring current any outstanding violation transactions (plus fees), to establish required tag deposits, and to establish the minimum balance.		
BO-025	The TCS shall provide a configurable low balance threshold for accounts by account type. The TCS shall allow the low balance threshold to be overridden with management approval on a case by case basis. The required minimum low balance threshold shall be subject to Joint Board approval.	X	
	Proposer Response: Kapsch fully complies with requirement BO-025 , and this compliance is described below: The BOS system supports providing a configurable low balance threshold for each account type or each individual account. This threshold is set based on a percentage of the calculated monthly usage, and according to account type. Additionally, the system allows for the thresholds to be overridden with management approval on a case by case basis. All thresholds are established in accordance with the Business Rules that are in effect.		
BO-026	It is desired that the Toll System Provider provide other services to promote customer self-service applications such as chat, SMS and other emerging payment options.		X
	Proposer Response: <b>Kapsch implements Value-Add BO-026, and this compliance is described below:</b> Leveraging our successful experience of the CTRMA Project, the Kapsch Team has carefully designed and is proposing full-featured BOS and IVR systems to support the Joint Board's (and our) customer communications in a prompt, efficient, and professional manner. These systems will be supported by proven Call Management SOPs adapted and tailored to the Joint Board's requirements. Contact channels available to the Joint Board's customers are: Phone (The Kapsch Team provides customers 24/7 access to a toll-free automated Interactive Voice Response (IVR) phone system for payment and customer support services and information. Additionally, the Kapsch Team will offer person-to-person customer service support during the agreed upon hours of operations); E-mail (Dedicated operation support staff are available to respond to customer inquiries/requests submitted via e-mail); Live Chat (the Kapsch Team's' BOS system provides for chat functionality - Live Agent is fully integrated to the BOS system allowing agents to chat with live customers); and SMS (customer account alerts are sent through SMS messaging). Additionally, the BOS shall support (through existing interfaces) the ability to serve the underbanked/unbanked by allowing for the payment of services (account replenishment, invoice payment, and violation payment) through local businesses (such as MoneyGram locations, Walmart, etc.). During the initial establishment phase of the system, the appropriate local establishments can be added to this capability.		

		Required	Value Add
Req ID	Back office (Section BO)		
BO-027	The Toll System Provider shall ensure consistency of service, regardless of whether these services are provided in-house or by one or several external service providers, by developing policies and procedures and ensuring compliance with these policies and procedures.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-027 , and this compliance is described below:</p> <p>The Kapsch Team has carefully designed and is proposing robust, full-featured systems to support the Joint Board's customer communications in a prompt, efficient, and professional manner. The proposed BOS solution has a wide range of automated account alert and notification features and the system has been tightly integrated with a state-of-the-art IVR/CRM system and a highly functional Web site.</p> <p>These systems will be supported by proven Call Management SOPs and an Operations Plan tailored to the Joint Board's requirements. To maintain high levels of customer service, the Team will actively monitor call volume statistics and proactively train and reinforce staff to meet or exceed the Joint Board's CSC performance goals. An important part of this management approach is to cross-train CSR staff throughout the CSC operation. This will allow us to allocate qualified customer service staff to meet peaks and valleys of customer demand and to ensure that the Joint Board's critical performance metrics are being met.</p> <p>These same policies and procedures are currently in place for all customer-facing agents regardless of whether they are Kapsch Team staff or external service providers.</p>		
BO-028	The TCS shall set up and maintain all account types including ETC Accounts, Registered Video Accounts, Unregistered Video accounts, commercial accounts and government accounts.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-028 , and this compliance is described below:</p> <p>The Kapsch Team's BOS system already supports the establishment and maintenance of multiple account types including: ETC (pre-paid) accounts; Registered (pre-paid) video billing accounts; Un-registered (post-paid) video billing accounts; commercial/fleet accounts; non-revenue accounts; and government accounts. Additional account types may be defined in the future, and can be created with the appropriate business rules. In this way, the BOS allows for future expandability to accommodate new technologies and/or business rules.</p>		
BO-029	Any external stakeholders including but not limited to the Joint Board shall have access to review, view, and examine customer accounts in accordance with the approved System Access Control Plan. The TCS shall allow at least 10 Joint Board users to examine customer accounts, concurrently.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-029 , and this compliance is described below:</p> <p>Access to all system resources will be governed by security protocols and operating system parameters used to limit access to hardware and networking components. All software components will be configured to limit or grant access to authorized personnel and all access is password controlled.</p> <p>Within the BOS application all access is controlled from the application layer via role-driven access. Access to the BOS solution will be granted to external stakeholders (such as the Joint Board) to review, view and examine customer accounts as read-only access to protect the integrity of the system and customer accounts. The TCS shall allow at least 10 Joint Board users to examine customer accounts, concurrently.</p> <p>A System Access Control Plan outlining security protocols and access controls and measures will be provided to the Joint Board for review and approval.</p>		
BO-030	The TCS shall display in the account the most current address available through DMV look-up or the address provided by the customer.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-030 , and this compliance is described below:</p> <p>The BOS system captures address information as part of the CSC Module. Address Information contains Address1, Address2, City, State, Country, and Zip Code. By default, system saves the address type as "PRIMARY. Add and edit/delete operations can be performed on the address information. For ETC account and Registered Video Bill accounts, this field is populated by the address provided by the customer. If however, mail is return using the customer provided address, the TCS shall utilize NCOA (return address correction system) where provided.</p> <p>For post-paid video billing accounts and violation accounts, the BOS solution interfaces with the DMV or Nlets (for Out of State Look Ups) to obtain the most current address available. This address is populated in the Address field for these account types.</p>		

		Required	Value Add
<b>Req ID</b>	<b>Back office (Section BO)</b>		
BO-031	It is desired that the TCS store previous customer addresses in the account and that they are easily viewable by authorized users.		X
	<p>Proposer Response:</p> <p><b>Kapsch implements Value-Add BO-031, and this compliance is described below:</b></p> <p>The BOS system shall retain address history in the system and such history shall be viewable in the BOS system by all CSRs (with appropriate security level). Address history shall contain the same address information as the "PRIMARY" address and also displays the date(s) that the change(s) of address was made and by whom (system or user).</p>		
BO-032	The TCS shall include functionality to re-look-up addresses after lapse of a configurable period of time to ensure the correct address is being used by the Toll System Provider.	X	
	<p><b>Note:</b> This functionality is intended to ensure the Toll System Provider has current name and address information for infrequent unregistered customers.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-032 , and this compliance is described below:</p> <p>The BOS solution allows for configuration to look for an update address after a period of time for post-paid video accounts and violation accounts to ensure that the correct address of record is being used in the BOS system.</p> <p>In addition, as part of the SOPs, CSRs will ensure that customer address information is current, when working with the customer during a phone contact.</p>		
BO-033	The TCS shall have functionality or operations processes to address Customer Statements or Violations notices returned with NIXIE (as defined by the United States Postal Service) codes. The TCS shall use skip tracing or other methods to find and update the correct address associated with customer accounts.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-033 , and this compliance is described below:</p> <p>The BOS solution has the ability to capture NIXIE information upon receipt of returned mail (NIXIEs). A case is opened to have the account status changed to reflect the returned mail item. Once identified, the account is eligible to have skip tracing performed to find a more current address for the customer/violator. Once an account has been identified as having returned mail, The Kapsch Team performs a national skip tracing process. We use numerous national skip tracing vendors. These vendors provide information that gives us the best chance to contact and secure payments on a client's account, by obtaining the most current information available. Updated address information is obtained prior to generating and sending the new notice. Immediately after account information is verified or updated via skip tracing, a notice is sent.</p>		
BO-034	The TCS shall provide Customer Statements that shall be configurable by account type.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-034 , and this compliance is described below:</p> <p>The BOS system and notice generation process supports the generation of variable customer statements based on account type, or in the case of video billing and violation processing based on aging of unpaid video billing notice.</p> <p>The format of these notices is established by template, and then connected by the appropriate account type, or its place in the process flow. This allows for the adjustment of a template when necessary.</p>		
BO-035	Customer Statements shall be provided to toll patrons monthly and as requested at any time by mail and email. Customers may opt in and opt out of receiving statements.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-035 , and this compliance is described below:</p> <p>Through the BOS solution, Account Activity Statements are sent electronically or via paper through the mail, based on the customer's selection in their account preferences. At any time, the customer can opt-in or opt-out of receiving statements by changing their account preferences. Account activity statements can be generated for monthly or quarterly periods, depending on a system parameter setting. In addition, it is possible to establish fees for generating various statements. For example, a monthly statement sent by e-mail might be free, but by mail might cost \$1.00. This allows the Joint Board options when considered various cost recovery methods.</p>		

		Required	Value Add
Req ID	Back office (Section BO)		
BO-036	Customer Statements shall be configurable to include a fee to the customer account from \$0-\$99 per statement. The fee shall be established by the Joint Board.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-036 , and this compliance is described below:  Through the BOS solution, it is possible to establish fees for generating various statements. For example, a monthly statement sent by e-mail might be free, but by mail might cost \$1.00. This allows the Joint Board options when considered various cost recovery methods. The BOS solution allows for a range of fees (\$0 - \$99), which can be assigned to the various statement types (customer statements, invoices, violation notices).</p>		
BO-037	The Toll System Provider shall have a near-real time interface with the Roadside System to transmit Traffic Transaction information from the Roadside System to the BOS and transmit configuration or customer information from the BOS to the Roadside System. Near real time requirements are defined in SA-021.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-037 , and this compliance is described below:  The BOS interfaces to the Roadside system via the Facility Host. All transactions generated at the Roadside are transmitted over the network to the BOS for processing with minimal delay. Customer Information Updates (tag list and/or plate lists), and watch lists are transmitted to the Roadside (based on the design) at intervals specified in system parameter settings. For example, a full tag update might be sent twice a day (every 12 hours), but specific tag updates (a customer just paid into their account establishing a positive balance) are immediately. All of these intervals will be established in accordance with the developed Business Rules and SA-021. Each of the toll zones will have redundant communication lines for direct transfer of all Financial, Traffic, and Event Transactions in near-real-time. The optimal configuration shall maintain faster than near-real-time performance, with the ability to throttle transmission speeds during peak traffic times. Our system is designed to prioritize Event Transactions, allowing MOMS monitoring to occur in sub two-second transfer speeds. This prioritization allows rapid identification of potential problems in the system, and actions are taken to avoid any downtime at all times and specifically during peak times.  Kapsch will provide redundant symmetric communication links to both the Downtown Equipment Pad and the East End Equipment Pad. These links will provide the necessary bandwidth to support the system operations in near-real-time. These will be fiber links supporting equal inbound and outbound data rates, and accommodating even higher rates when travel volumes justify the need for a different data plan. The initial data rate is sized to accommodate transfer of transactions and images to the Facility Host at the BOS site as soon as they become available and well within the 4-hour limit cited above in Section SA-021. The Facility Host and the BOS are co-located and interconnected via high-speed links internal to the Kapsch Team's Austin facility.</p>		
BO-038	The Toll System Provider shall integrate the BOS with the changeable message panels as outlined in Technical Requirements Section RS. A record of all Toll Rate Schedules shall be stored in the BOS in accordance with the backup and archiving timeframe for the TCS.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-038 , and this compliance is described below:  The BOS (and TCS) will maintain a historical record of all Toll Rate Schedules, including time-date stamp of implemented change. This will enable the support of any research requirements (audits, customer requests). In addition, current toll rate schedules are sent to the Roadside, where they will be maintained for application of the correct toll rate, and for display of the current toll rate on the CMS displays.</p>		
BO-039	The TCS shall have an interface with the E-ZPass system and interoperable agencies, and the Toll System Provider shall comply with the E-ZPass Operating Agreement, any agreements with other interoperable agencies, and all applicable amendments.	X	
	<p>Note: The E-ZPass Operating Agreement and all associated and applicable amendments as of the date of the RFP are available in the Reference Information Documents.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-039 , and this compliance is described below:  The TCS contains an interface which is in compliance with the E-ZPass Interoperability Specifications. This includes the file exchange as well as the reports, which are required to support reconciliation. The TCS complies with all technical reciprocity requirements, and support all of the functional requirements related to</p>		



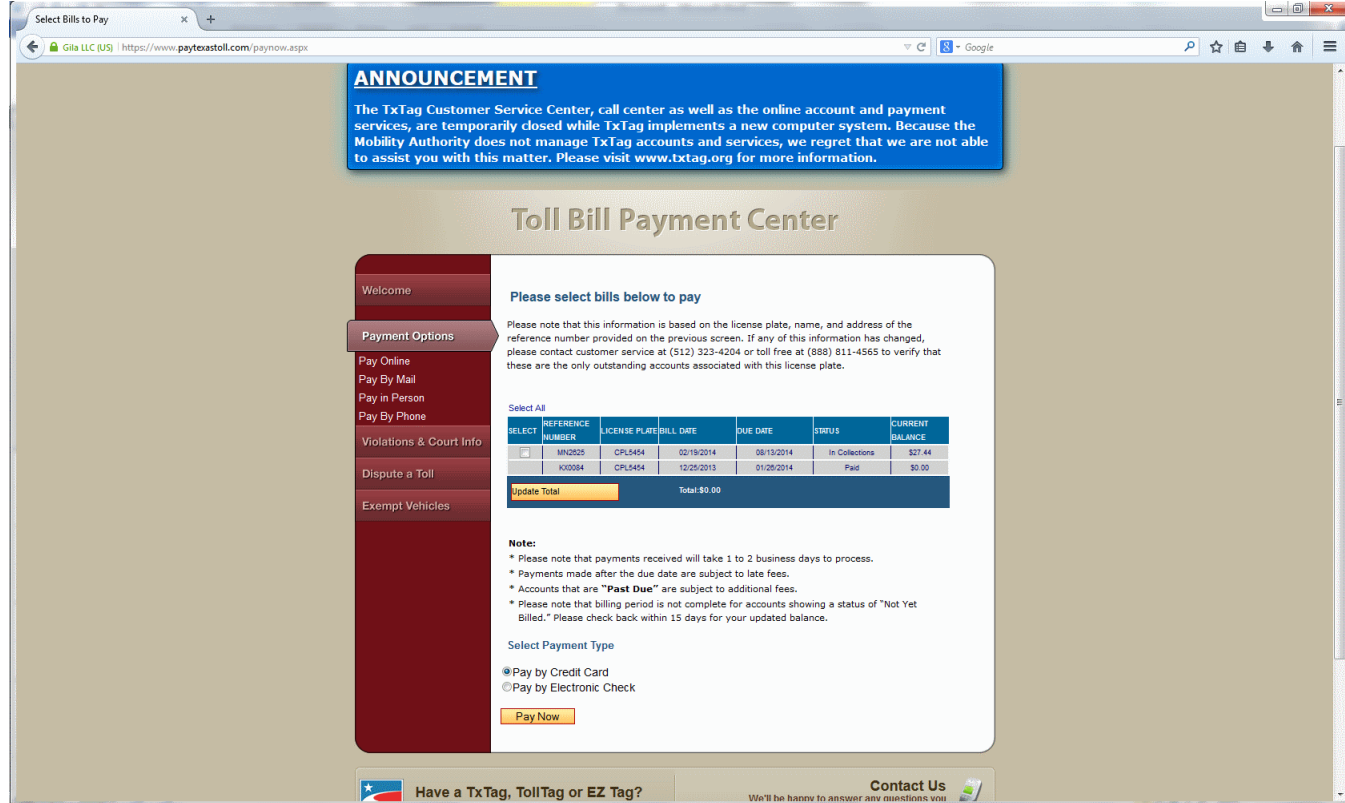
		Required	Value Add
Req ID	Back office (Section BO)		
	interoperability and reciprocity with the E-ZPass Operating Agreement including: <ul style="list-style-type: none"> <li>• Creating, receiving and processing toll tag status files.</li> <li>• Creating, receiving and processing revenue settlement reports for reciprocal transactions between the Joint Board and the other agencies.</li> <li>• Providing functionality to perform settlement among agencies.</li> <li>• Providing a point of contact responsible for tracking and reconciling transactions and revenues due to and owed by the Joint Board.</li> </ul>		
BO-040	[Intentionally not used.]		
BO-041	The Toll System Provider's BOS architecture shall operate within limited degradation for specific failure modes that shall be established during the Business Rules and system architecture review.	X	
	Proposer Response: Kapsch fully complies with requirement BO-041 , and this compliance is described below: Kapsch's BOS architecture will support the requirement to operate within limited degradation for specific failure modes to be established during the Business Rules and system architecture review		
BO-042	The Toll System Provider shall process customer payments for tolls, fees and fines via credit card, check, money order, or cash. The Toll System Provider shall provide system functionality to encourage customers to establish auto replenishments for pre-paid accounts.	X	
	Proposer Response: Kapsch fully complies with requirement BO-042 , and this compliance is described below: The Kapsch Team believes that an effective electronic tolling program begins with having numerous ways for customers to pay. BOS payment options include: Internet based website for credit card and ACH payments; Integrated voice response (IVR) phone system for credit card or ACH payments; internal lockbox via check, money order, cash, credit/debit cards or ACH; Cash payments through retail location (such as Ace Cash Express). Payments will be handled per the Joint Board's business rules and in accordance with the established practices of handling funds. CSC staff are carefully trained and monitored for adherence to the Joint Board-approved Operations Plan, SOP's and performance metrics. Payments are applied to customer accounts immediately, with the ability to apply fees for returned checks or handle other payment exceptions.		
BO-043	The Toll System Provider shall safeguard cash deposits and shall provide armored car services in accordance with the Safety Plan.	X	
	Proposer Response: Kapsch fully complies with requirement BO-043 , and this compliance is described below: The Kapsch Team has existing operational procedures to ensure adequate controls are in place to address financial management, specifically ensure cash is secure and adequately monitored. SOPs are in place to ensure that cash deposits are safeguarded all the way through the transfer of custody to the courier for depositing. This SOP includes (but is not limited to) the following processes: <ul style="list-style-type: none"> <li>• During the shift, the Walk-Up Centers (WUCs) CSRs will lock their cash drawer and remove the key when they leave their work station.</li> <li>• All cash drawer funds are stored in the Supervisor's office safe; the safe shall remain locked at all times.</li> <li>• Storefront Supervisor shall have employees initial a daily reconciliation form before receiving the numbered money bag with the cash drawer funds.</li> <li>• At end of shift, the WUCs CSRs shall count down the cash, check funds, and record the amount on the daily reconciliation form.</li> <li>• Storefront Supervisor will review and approve the daily reconciliation form; complete a Deposit Reconciliation Summary and place the Deposit Reconciliation Summary in a money bag; seal it; and return the sealed money bag to the safe.</li> <li>• Deposit Clerk completes a single, combined deposit, place the funds to be deposited in a tamper-proof money bag, and place the bag into the safe until the deposit is taken to the bank.</li> <li>• Deposit Clerk completes the Bank Deposit Courier Log. At the time of pick-up, the courier signs the Bank Deposit Courier Log to verify that funds are now in control of the courier.</li> </ul>		

		Required	Value Add
Req ID	Back office (Section BO)		
	This SOP also covers the handling of any cash received in the main CSC processing center. Armored car/courier services will be utilized for the transport of all cash deposits between cash handling facilities and the bank.		
BO-044	The TCS shall process refund requests from customers. Credit card or debit card based toll accounts shall be refunded to the same card. Cash toll accounts shall be refunded with a check mailed to the address of record on the account.	X	
	Note: This Technical Response Form shall outline the Proposer's existing refund process including prescribed escalated times and authorization levels.  Proposer Response: Kapsch fully complies with requirement BO-044 , and this compliance is described below: CSR staff will be trained to follow proven procedures that ensure required adjustments are made prior to closing an account and processing any refunds. This may involve procedures relating to posting of interoperable, home agency or video-based transactions. Account closures and refunds will be processed in a manner consistent with the Joint Board's business rules. CSC staff will be able to request, track and issue refunds through the BOS system, using the last replenishment method on the account, or in the event that the replenishment method is no longer valid, in the form of a check.		
BO-045	Lockbox payments shall be received through an internal or external lockbox. The TCS shall process configurable returned check fees and TSP shall support the occasional times when cash is mailed to the lockbox. Returned check fees shall be identified and the appropriate account shall be charged a configurable fee for a returned check and record of the returned check and the fee shall be linked to the customer account in the TCS.	X	
	Proposer Response: Kapsch fully complies with requirement BO-045 , and this compliance is described below: As part of its Back Office Operations, The Kapsch Team operates a segregated secure lockbox where all payment processing is handled. The staff that performs these functions does not cross into other operational areas to ensure segregation of duties, as an audit standard. The internal lockbox processes payments received via check, money order, cash, credit/debit cards or ACH. Payments are applied to customer accounts immediately, with the ability to apply fees for returned checks (this is a configurable fee amount) or handle other payment exceptions. The same interface specification used for the internal lockbox can be used to interface an external lockbox, if desired by the Joint Board.		
BO-046	The Customer Website shall provide access for customers who do not have a Transponder to pay tolls, to pay Violations, to sign up for Registered Video accounts and ETC Accounts, and to manage Unregistered Video accounts.	X	
	Note: Unregistered Video Accounts may be available from the web, depending on the Proposer's design, to pay for tolls prior to the issuance of a Customer Statement.  Proposer Response: Kapsch fully complies with requirement BO-046 , and this compliance is described below: The Kapsch Team's customer website enhances the customer's interaction with the BOS by giving them the option to perform the following actions: Establish an account; review account; perform account maintenance; make a payment; request a call back; request a transponder; review Frequently Asked Questions (FAQs); report a dispute; download dispute documentation; view account statement and/or notifications. Payments processed via the web include payments for either registered or unregistered video bill accounts or violation accounts. In addition, the customer (who has just used the toll facility) has the option to pay a toll for a transaction just occurred (within a prescribed time period) even without a transponder or account. All that is required is a License Plate, a payment method, and the time and location of the transaction.		
BO-047	It is desired that the TCS be configurable by System operators to establish payment plan arrangements for certain customers.		X
	Proposer Response: <b>Kapsch implements Value-Add BO-047, and this compliance is described below:</b>		

		Required	Value Add
<b>Req ID</b>	<b>Back office (Section BO)</b>		
	<p>The BOS system shall permit payments to be made by customers via methods to include: mail (lockbox), telephone, IVR, and web using a credit card, ACH, EFT, money order or cashier's check. Kapsch shall use best efforts to provide at least one other retail location, in addition to the Walk Up Centers, approved by the Joint Board to accept payments at all times during the TCS Operations and Maintenance Term.</p> <p>The BOS offers installment payment plans as an option to customers, and these can be set up by CSRs with the appropriate security level. Payment plans are closely managed and have become a growing part of collection efforts and industry standard practice. The Kapsch Team will work with the Joint Board to establish rules governing payment plans.</p>		
BO-048	The TCS shall provide functionality for customer account communications and related system updates for adding vehicles to an account, requesting a Transponder, account maintenance communications, and payments, among other customer account communications.	X	
	<p>Proposer Response: Kapsch fully complies with requirement BO-048 , and this compliance is described below: The BOS solution generates automated notices, letters and communications by regular mail, e-mail, and/or SMS messages. This function is configurable and is automated and notices are sent depending on the preference that the customer indicates at the time of account creation. Customers automatically receive confirmation, according to their settings, of their account activity. Systems and processes are in place to monitor operations to ensure transaction processes, file transfers, status updates, account management functions are being performed in an accurate and timely manner, and this includes controls to ensure notice generation and distribution. This allows for notices to be sent regarding credit card expirations, account replenishments, and other correspondence as required. A full set of possible correspondence will be reviewed with the Joint Board as part of the design phase.</p>		
BO-049	[Intentionally not used.]		
BO-050	The TCS shall transfer payments between ETC Accounts, Registered Video accounts, Unregistered Video accounts and Violation accounts. The TCS shall accept post payments or other Joint Board designated account types.	X	
	<p>Proposer Response: Kapsch fully complies with requirement BO-050 , and this compliance is described below: The BOS solution has the ability to transfer payments from one account to another irrespective of account type. Payment can be transferred between ETC Accounts, Registered Video accounts, Unregistered Video accounts and Violation accounts. In addition, the BOS solution will accept post payments for other Joint Board designated account types, when those accounts are established. These transfers can be handled by CSR personnel with the appropriate security and access levels.</p>		
BO-051	The TCS shall associate a credit card to an account for the purpose of toll payment where necessary as indicated in the Business Rules. The credit card transactions, debit card transactions, automated clearing house payments and refunds shall be processed in near-real-time. The TCS shall provide for the credit card information to be added, changed, or deleted on the customer account. Near-real-time is defined as an authorization code provided within 2 minutes. The settlement of the transaction may occur up to 72 hours after the time of the authorization.	X	
	<p>Proposer Response: Kapsch fully complies with requirement BO-051 , and this compliance is described below: Individual Payments can be made, and the amount will be added to customer's account balance. Payments can be accepted through the use of credit/debit cards (logo'd), and ACH, and will be processed immediately with the designated payment processor. The payment is in a pending status until receipt of the authorization code, and then the payment is shown as completed. These individual payments can be made from the payment information on file in the customer's account or from payment information entered into the customer website, or as provided to the CSR. Settlement times are a function of the payment processor selected, and this will be part of the contract with the payment processor.</p>		
BO-052	The TCS shall accept and process various types of payments including credit card, debit card, automated clearing house, money order, cashier's check, traveler's check, personal check and cash, and shall track those payments and methods of payment, posting them to the appropriate customer account in near-real-time. The	X	

		Required	Value Add
Req ID	Back office (Section BO)		
	TCS shall provide multiple payment options within one Financial Transaction and shall accept partial payments towards the account balance based on the Traffic Transaction and Financial Transaction posting date/time in a first-in, first-out (FIFO) manner. For credit card, debit cards, and automated clearing house payments, please see definition of near-real-time in BO-051. For money order, cashier's check, traveler's check, personal check and cash, near-real-time means the payments shall be posted to the customer's account no later than 1 business day from the bank making the funds available for that financial instrument.		
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-052 , and this compliance is described below:  The BOS system accepts and processes various types of payments including credit card, debit card, automated clearing house (ACH), money order, cashier's check, traveler's check, personal check and cash. The BOS solution posts these payments to the appropriate customer account in near-real-time (posted no later than 1 business day from the bank).  The BOS solution provides for multiple payment options (as indicated above), and accepts partial payments towards the account balance based on the toll transaction and financial transaction posting date/time. Payments are applied to amounts due on a first-in, first-out (FIFO) manner to ensure that the oldest amounts due are paid first, whether violation, invoice, or account replenishment.</p>		
BO-053	The TCS shall allow for review of Customer Statements by customers at the Walk-Up Centers and the Customer Website.	X	
	<p>Note: The Proposer shall include other channels to present the Customer Statements in its Technical Response Form.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-053 , and this compliance is described below:  The customer website allows for customers to view account statement and/or notifications. This information is part of the account history, and allows for reviewing previous as well as current information. The customer can also print the statement from the website.  Additionally customers will be welcome to visit one of the WUCs to view/review their statements using the BOS system, where the statements are viewable to the WUC CSR for review with the customer.  Customer statements are also provided on a monthly/quarterly basis by e-mail or mail, depending on the customer's account settings.</p>		
BO-054	The Toll System Provider shall provide a credit card processing merchant and system for approval by the Joint Board.	X	
	<p>Note: The Proposer shall include in this Technical Response Form the credit card fees and rates expected to be paid as Pass Through Cost Items during the Term of this Agreement.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-054 , and this compliance is described below:  The Kapsch Team currently utilizes USA ePay (or another service provider approved by the Joint Board) as LSIORB's merchant provider/credit card processor and our systems shall directly integrate with their payment gateway. All credit card information is stored on USA ePay systems to comply with PCI level I standards.  The Kapsch Team shall provide the best merchant fee available, not to exceed 3%, as a Pass-Through Cost Item.</p>		
BO-055	The TCS shall provide for automatic replenishment of funds for a toll customer account and provide for the acceptance of notifications from banking institutions regarding status of credit, debit, or automated clearing house accounts.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-055 , and this compliance is described below:  Kapsch shall provide a BOS system feature which provides for automatic replenishment of funds for a toll customer account. Automatic replenishments shall be performed once an account reaches the low balance threshold, and shall be processed using the primary payment method listed on the account. The BOS shall accept notifications from banking institutions regarding status of credit, debit, or automated clearing house accounts.  The BOS shall periodically analyze the average toll usage in customer accounts and determine if the replenishment levels and threshold levels need to be adjusted based upon current usage. The goal will be to ensure that replenishments occur once a month (on average), and that the threshold level is set to about 1/3 of the monthly usage.</p>		
BO-056	The Toll System Provider shall provide a license plate image review system and operations.	X	

		Required	Value Add
Req ID	Back office (Section BO)		
	<p>Proposer Response:  Kapsch fully complies with requirement BO-056 , and this compliance is described below:  Kapsch's toll image processing system (TIPS) was implemented in late 2012 and is designed to provide a high level of automation and accuracy in processing video tolls. TIPS utilizes multiple OCR engines and uses historical data to determine plate values and jurisdictions for vehicles. The system can also utilize results from foreign OCR engines in calculating its results (typically from cameras which utilize an on-board OCR engine) to maximize automated read rates.  TIPS is fully configurable to the agencies requirements regarding accuracy as well as process, accommodating 'double blind' reviews or other process flows. <b>Since implementation, TIPS has reduced the labor required for manual review by 66% while increasing the accuracy of our results.</b>  Additionally, all images utilized for identification are archived, and can be accessed for future needs such as court evidentiary packets or law enforcement identification.</p>		
BO-057	The TCS shall manually view images to confirm or correct the vehicle LPN and state information when below a specified configuration OCR confidence threshold.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement BO-057 , and this compliance is described below:  As mentioned above (in BO-056), the TIPS system leverages historical results to increase the automation or 'auto-pass' rate of images requiring review. As new results are generated and validated by human review, the results are relayed back into the system to provide the OCR engines a reference against which to match their results.  Our default configuration is to require at least one human review on plates that have no history to verify OCR results. This ensures historical information has been validated at least once. This history table can be made available to the Joint Board upon request for use with law enforcement or other purposes related to enforcement.</p>		
BO-058	The TCS shall report an exception when the number of image-based trips exceeds a configurable threshold for an ETC Account. The TCS shall change the toll rate from the ETC rate to an Unregistered Video or Registered Video toll rate in accordance with the Business Rules once this threshold is reached. This process shall initiate an alert or BOS ticket.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement BO-058 , and this compliance is described below:  The TCS fulfills this requirement through the use of a system configuration parameter. Through the use of the system configuration parameter, the account will be flagged to apply additional (or different) charges to the transactions when the parameter value has been exceeded. Any flags will trigger an alert in the MOMS ticket system for further review and actions.  A set of standard reports will also be available to list the accounts and the number of exceptions per account, so that some form of intervention can be managed with these accounts.</p>		
BO-059	The TCS shall identify License Plate Numbers and jurisdictions from all 50 states and all provinces of Canada.	X	
	<p>Note: The Proposer shall identify the number of plates and plate types the OCR Software can be tuned to recognize in this Technical Response Form. The Proposer shall provide a list of the 15 states expected to originate the most Traffic Transactions within 90 days after NTP.</p> <p>Proposer Response:  Kapsch fully complies with requirement BO-059 , and this compliance is described below:  The BOS will identify License Plate Numbers and jurisdictions from all 50 states and all provinces of Canada through the image review process (both OCR and manual review). OCR engines will be tuned to recognize Kentucky and Indiana plates. In addition TIPS (the Image Processing System) can leverage existing tuning of OCR engines for Texas and Florida plates.  After analysis of traffic (through a separate License Plate survey), a report will be made available to provide a list of the 15 states that originate the most toll transactions within 90 days of NTP.  It should be noted that for enforcement purposes, some states (like Arizona), will not provide owner information for toll violation enforcement.</p>		
BO-060	It is a desired that the TCS provide an interface to an electronic bulk mailing system for mailing of Correspondences, statements, bills, and notices to customers.		X

Req ID	Back office (Section BO)		
	<p>Proposer Response:  <b>Kapsch implements Value-Add BO-060, and this compliance is described below:</b>                      The Kapsch Team shall provide an interface to an electronic bulk mailing system for mailing of Correspondences, statements, bills, and notices to customers and similar high-volume standardized mailings and will ensure the high-volume of mail is managed with the timeliness and professional care required for sensitive customer communications.                      In addition, our in-house system allows for bulk e-mail of customer Correspondences, statements, bills, and notices to customers.</p>		
BO-061	<p>The Customer Website shall allow customers to establish, maintain, update, and review account information, order Transponders, pay Violations, pay "pay by plate" Traffic Transactions, establish Registered Video accounts, and ETC Accounts and make payments via a PCI compliant secure methodology. Customers shall be able to complete all Transaction activities through the Customer Website. The Customer Website shall be user friendly, high quality, attractive and easily understood by toll patrons. The Toll System Provider shall coordinate Customer Website design and content with the marketing firm engaged by the Joint Board.</p>	X	
	<p>Proposer Response:  <b>Kapsch fully complies with requirement BO-061 , and this compliance is described below:</b>                      Kapsch's customer website enhances the customer's interaction with the BOS by giving them the option to perform the following actions:</p> <ul style="list-style-type: none"> <li>• Establish an account</li> <li>• Review account</li> <li>• Perform account maintenance</li> <li>• Make a payment (pay violations, pay video billing transactions, account replenishment payments)</li> <li>• Request a call back</li> <li>• Request a transponder</li> <li>• Report a transponder Lost/Stolen</li> <li>• Add/Remove Vehicles</li> <li>• Review Frequently Asked Questions (FAQs)</li> <li>• Report a dispute</li> <li>• Download dispute documentation</li> <li>• View account statement and/or notifications</li> </ul> <p>Our customer website design is responsive, and allows for the interaction with desktop or mobile browsers, and mobile apps. As part of the design effort, the website will be adapted to the Joint Board's needs in coordination with the selected marketing firm.</p>		
	 <p>The screenshot shows a web browser window with the URL https://www.paytastoll.com/paynow.aspx. The page title is "Select Bills to Pay". At the top, there is a blue "ANNOUNCEMENT" box stating that the TxTag Customer Service Center is temporarily closed. Below this is the "Toll Bill Payment Center" header. A sidebar on the left contains navigation links: Welcome, Payment Options (Pay Online, Pay By Mail, Pay in Person, Pay By Phone), Violations &amp; Court Info, Dispute a Toll, and Exempt Vehicles. The main content area prompts the user to "Please select bills below to pay" and includes a table with columns: SELECT, REFERENCE NUMBER, LICENSE PLATE, BILL DATE, DUE DATE, STATUS, and CURRENT BALANCE. The table lists two bills: one for \$27.44 (In Collections) and one for \$0.00 (Paid). Below the table is an "Update Total" button showing a total of \$0.00. A "Note" section provides additional information about payment processing and late fees. At the bottom, there are radio buttons for "Pay by Credit Card" (selected) and "Pay by Electronic Check", along with a "Pay Now" button.</p>		
BO-062	<p>The BOS shall provide information to the CSR regarding account status including but not limited to balance of account, expired credit card information, excessive image Traffic Transactions notification, and outstanding Customer Statements.</p>	X	
	<p>Proposer Response:  <b>Kapsch fully complies with requirement BO-062 , and this compliance is described below:</b>                      The advanced features of the BOS solution, integrated with our telephony solution and web site, will be supported by an efficient, flexible CSC staff to make customer services, account management and video billing and violation operations very accessible and efficient. While the majority of account management activities will be performed through the CSC, with the BOS Solution, customers are empowered to self-perform extensive account management functions 24 hours a</p>		

		Required	Value Add
<b>Req ID</b>	<b>Back office (Section BO)</b>		
	<p>day through the Web site and IVR systems. The account management functions that are processed using the BOS solution includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>• CSR Alerts: CSRs are alerted upon customer account access regarding vital and configurable account status information</li> <li>• Account Notes: All account accesses and any transactions performed on an account (whether by the customer themselves or by a CSR) will be recorded in the account history. The system will record all account activity automatically with the appropriate description and time stamp. CSRs will be able to annotate customer issues or comments to account history with manual account notes.</li> <li>• Account Status Changes: Full-service account management capabilities will be provided to the customer via the store front, Web site, IVR, mail, e-mail, fax, and phone to manage account status changes such as payment type, balance of account, expired credit card information, invalid transponder, transponder status change, and excessive i-toll transactions. Other account status changes (such as negative balance) will be handled per the Joint Board's business rules.</li> <li>• Account Alarms: Account Activity Statements will be sent electronically or via paper through the mail. Account activity will be available for monthly periods. Customers will also be able to access account history and statements via the Website.</li> <li>• Account Adjustments. The BOS system will allow an authorized user to reverse tolls, fees and payment transactions; add toll transactions; revise toll transactions due to vehicle classification corrections; or transfer transactions from one account to another.</li> </ul>		
BO-063	The Customer Website shall include the following information: road information, branding information, Joint Board contact information (email and phone number), information about how to open a Registered Video account and an ETC Account, information about how to pay a toll after a customer has travelled a Bridge without a pre-paid account, frequently asked questions, any upcoming maintenance or other information and links to other websites.	X	
	<p>Proposer Response: Kapsch fully complies with requirement BO-063 , and this compliance is described below: The customer website provides for the ability to provide Informational pages as well as the account features discussed previously. The site can provide toll information, a map with toll locations, and links to Joint Board information (meetings, minutes, financial information). Standard sections of the website include FAQs (which will be updated for the specific tolling area), forms for downloading (customized to the Joint Board's forms), and online forms for disputes and requesting general information. The finalization of the look-n-feel of the website will be coordinated with the Joint Board's selected marketing firm.</p>		
BO-064	The Customer Website shall incorporate security standards to protect customers from unauthorized access and restrict access to any unauthorized users. At a minimum, customer data shall be password protected and the Customer Website shall include a password change policy. SSL encryption shall be implemented by the Toll System Provider.	X	
	<p>Note: The Toll System Provider shall also identify in this Technical Response Form other security measures to be used in the TCS.</p> <p>Proposer Response: Kapsch fully complies with requirement BO-064 , and this compliance is described below: The back office systems including the customer website follows the recommendations and guidelines of the ISO/IEC 27000 series of standards dedicated to information systems security management. Given the dynamic nature of information security, the website design incorporates continuous feedback and improvement activities, to address changes in the threats, vulnerabilities or impacts of information security incidents. We protect customers from unauthorized access and restrict access to any unauthorized users. Accessing customer account requires validation of account information including password/PIN created by customer at time of account opening, account number, notice ID (for payment of video bill or violation notice), or license plate number (LPN). Customer data protected by hashed and salted passwords and enforced with a password change policy. The Content Management System software is kept up to date, and all form fields are verified prior to posting for injection or xss code using server side validation, and the customer interaction is protected through the use SSL encryption.</p>		
BO-065	The Customer Website content management system and actual Customer Website shall be in English.	X	
	<p>Proposer Response: Kapsch fully complies with requirement BO-065 , and this compliance is described below:</p>		

		Required	Value Add
<b>Req ID</b>	<b>Back office (Section BO)</b>		
	The customer website is implemented so that the primary language is English. Through the use of localization techniques, additional languages can be added at a later date, if the Joint Board so desires.		
BO-066	It is desired that the Customer Website provide other language support without re-programming the Customer Website.		X
	Proposer Response: <b>Kapsch implements Value-Add BO-066, and this compliance is described below:</b> As stated above (BO-065), through the use of localization techniques allows for the addition of other languages to the customer website. The Kapsch Team shall provide a bi-lingual CSC with Spanish as a secondary language, and shall provide bi-lingual services (website, notices, staffing) as needed.		
BO-067	The Customer Website shall include access for customers to Customer Statements and historical data, which historical data shall be available for two years by accessing the Customer Website, and then archived.	X	
	Proposer Response: Kapsch fully complies with requirement BO-067 , and this compliance is described below: The customer website will allow for customers to access and view account statements and/or notifications, along with historical account data that goes back two (2) years. Customers will also be able to print their statements and/or notices if they desire. In addition to viewing statements and historical data, customers are able to process other account management and maintenance activities as stated in previous responses above.		
BO-068	It is desired that the Customer Website have a user friendly content management system that allows the Joint Board to update content on the Customer Website without a programmer or any knowledge of programming.		X
	Proposer Response: <b>Kapsch implements Value-Add BO-068, and this compliance is described below:</b> The customer website for the project will be implemented so that the Joint Board's information section can be updated without programmer intervention. The customer account portion of the website will match the overall look and feel. This implementation will be coordinated with the Joint Board's selected marketing firm.		
BO-069	The IVR and Customer Website shall verify the customer's identity before disclosing or making any updates to customer data.	X	
	Proposer Response: Kapsch fully complies with requirement BO-069 , and this compliance is described below: The customer website and IVR system incorporate security standards to protect customers from unauthorized access and restrict access to authorized users only. Accessing customer accounts requires validation of account information including password/PIN created by customer at time of account opening, account number, notice ID (for paying of video bill/violation notice), and/or license plate number (LPN). Customer data is password protected, and controlled by a password change policy. The solution includes security features such as firewalls and SSL encryption to ensure against potential security intrusions through these portals.		
BO-070	The IVR shall provide access to general information, the option to direct the call to an operator, or direct the customer to select a specific option that corresponds to the customer's inquiry. The IVR shall support a second language, to be determined later by the Joint Board, without any Software changes.	X	
	Proposer Response: Kapsch fully complies with requirement BO-070 , and this compliance is described below: To meet customer desire for 24/7 service, The Kapsch Team will provide an IVR system and a feature-rich Web site. Both of these important customer interface systems will be tightly integrated with the BOS solution so that account and violation information and management functions are readily available to customers. The solution includes security features to ensure against potential security intrusions through these portals. The IVR/ACD system will route customers to CSC agents based on the customer selection of queues for routing, based on responses to menus presented through the IVR system. The menus, selections, and actions are programmable so that the menu tree can be adjusted based on the Joint Board's requirements. Our current IVR system supports Spanish as a second language for all of our clients, providing self-service and routing functions/options in both English and Spanish.		
BO-071	It is desired that the IVR measure and report a KPI for call answering performance for all calls transferred to agents. The metrics shall include the total customer call duration from the start of the IVR through completion on the automated system or with the CSR.		X

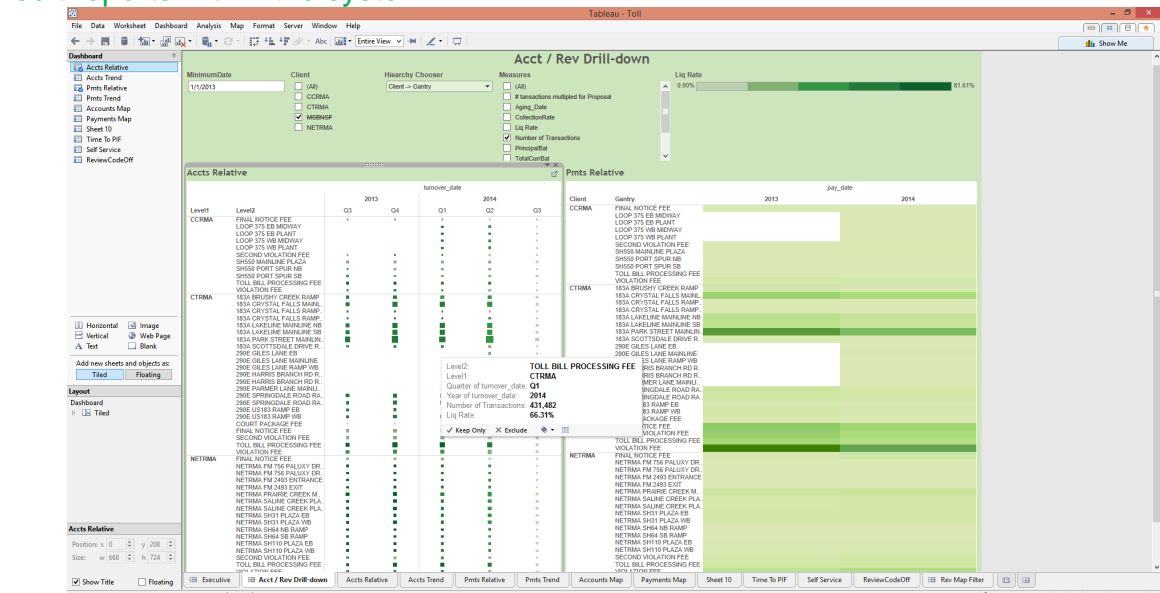
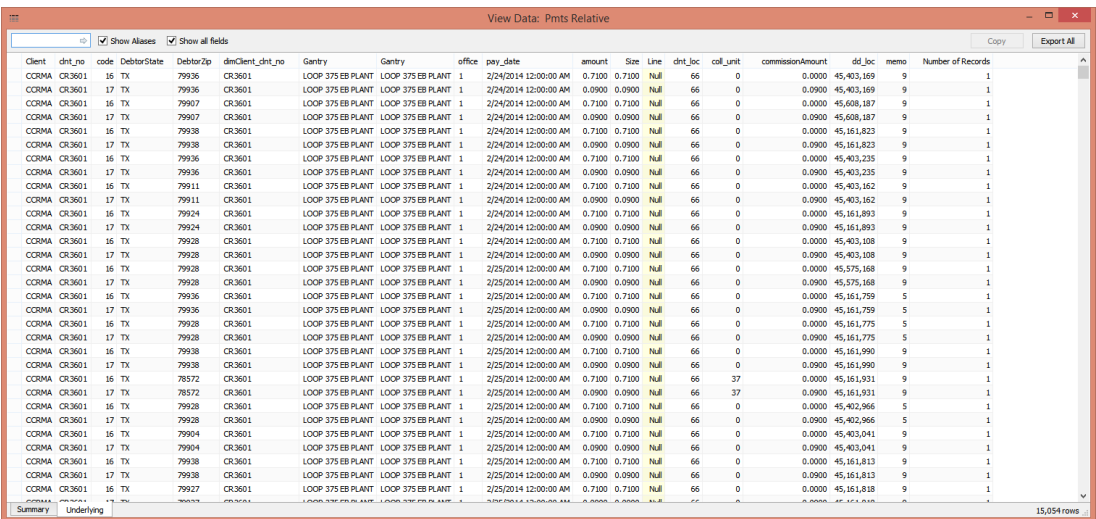


		Required	Value Add
<b>Req ID</b>	<b>Back office (Section BO)</b>		
	Proposer Response: [Redacted]		
BO-072	The TCS shall maintain a record of customer communications and interactions through the IVR and the Customer Website for customer, Bridge use and account analysis.	X	
	Proposer Response: [Redacted]		
BO-073	The IVR shall be integrated with the CSC to allow for transfer of calls and updates to the accounts in near real time. For the purpose of this requirement near real time shall mean that the call is transferred within 2 seconds upon initiation of a transfer by the customer.	X	
	Proposer Response: [Redacted]		
BO-074	The Customer Website and IVR shall allow the customers to make replenishments, post-paid toll payments and Violation payments, and update account information. Note: The Proposer shall describe each payment channel on the Technical Response Form.	X	
	Proposer Response: [Redacted]		
BO-075	The IVR and call management solution shall track and compile performance metrics statistics for CSC activities. The IVR shall track performance metrics statistics by hour, by day and by month for the following metrics and shall provide the Joint Board with a report of the same within 1 business day upon request and as part of the Monthly Operations and Maintenance Report. The minimum statistics to be tracked and reported are 1) total number of calls received, 2) total number of calls accepted by customer service representatives, 3) average time to answer, 4) maximum time to answer, 5) total number of calls that exceed configurable, specified hold time(s), and 6) total number of abandoned calls.	X	
	Proposer Response: [Redacted]		

		Required	Value Add
Req ID	Back office (Section BO)		
	<div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 80%;"></div> <div style="background-color: black; height: 10px; width: 95%;"></div> <div style="background-color: black; height: 10px; width: 98%;"></div> <div style="background-color: black; height: 10px; width: 70%;"></div> <div style="background-color: black; height: 150px; width: 80%; margin: 10px auto;"></div> <div style="background-color: black; height: 10px; width: 30%; margin: 5px auto;"></div> <div style="background-color: black; height: 10px; width: 60%;"></div> <ul style="list-style-type: none"> <li>■ <div style="background-color: black; height: 10px; width: 30%; display: inline-block;"></div></li> <li>■ <div style="background-color: black; height: 10px; width: 45%; display: inline-block;"></div></li> <li>■ <div style="background-color: black; height: 10px; width: 25%; display: inline-block;"></div></li> <li>■ <div style="background-color: black; height: 10px; width: 50%; display: inline-block;"></div></li> <li>■ <div style="background-color: black; height: 10px; width: 35%; display: inline-block;"></div></li> </ul> <div style="background-color: black; height: 10px; width: 95%;"></div> <div style="background-color: black; height: 10px; width: 85%;"></div>		
BO-076	The Customer Website shall be updated in near-real time with information related to Traffic Transactions, Customer Statements, account maintenance, payments, and any other information required by the Joint Board. Near real time is defined as an update to the BOS at least every 24 hours so that TSP shall maintain a complete history of account information.	X	
	Proposer Response: <div style="background-color: black; height: 10px; width: 50%;"></div> <div style="background-color: black; height: 10px; width: 90%;"></div> <div style="background-color: black; height: 10px; width: 85%;"></div>		
BO-077	The Toll System Provider shall provide a backup and archiving system for all components of the TCS.	X	

		Required	Value Add
<b>Req ID</b>	<b>Back office (Section BO)</b>		
	<p>Proposer Response:  Kapsch fully complies with requirement BO-077 , and this compliance is described below:  The Kapsch Team has partnered with Software House International (SHI) for a managed private cloud platform. This platform hosts the current BOS production environment and has a redundant back-up facility that is fully equipped to assume full workload at service level agreement production performance levels in the event a disaster incapacitates the primary facility.  In addition, the back-up facility is fully replicated to a third site that has the capability to restore service within a 4 hour SLA between The Kapsch Team and SHI.</p>		
BO-078	All accounts, customer information, IVR, Customer Website, and reports shall at a minimum be backed up every day. All System configurations required in recovering the System in case of outage or failure of any component shall be backed up every quarter and immediately whenever changes are made. These System confirmation backups shall include application, database and operating system settings. The backup data shall be retained off site from the CSC and TCS at the approved DR site.	X	
	<p>Note: The TSP shall describe in this Technical Response Form the backup and archiving plan for the TCS.</p> <p>Proposer Response:  Kapsch fully complies with requirement BO-078 , and this compliance is described in BO-077.  Please see above.</p>		
BO-079	The Toll System Provider shall archive data no later than every month to an offsite system. Archived data shall be available for 10 years. Upon request, data shall be recovered and available to the user for analysis within 2 business days.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement BO-079 , and this compliance is described in BO-077:  Please see above.</p>		
BO-080	All credit card payment processing shall be PCI DSS Security Standards Council compliant. The TCS database shall comply with all applicable standards issued by the PCI DSS Security Standards Council, including the PCI DSS at the start of operations in the BOS, and remain compliant throughout the Contract Term. Any costs associated with PCI compliance including e-commerce and merchant service costs are not Pass-Through Cost Items and shall be included in the Contract Price.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement BO-080 , and this compliance is described below:  Within the BOS application all access is controlled from the application layer via role-driven access. Additionally, The Kapsch Team BOS team member recently passed its annual full Payment Card Industry (PCI) audit and is certified PCI Level II compliant.  Quarterly PCI scans are successfully conducted, and third-party annual scans meet or exceed standards. The BOS will be PCI compliant at the start of operations and will remain compliant throughout the contract term.  All credit card payment processing shall be PCI DSS Security Standards Council compliant. The TCS database shall comply with all applicable standards issued by the PCI DSS Security Standards Council including the PCI DSS at the start of the operations in the BOS, and remaining compliant throughout the Contract Term.  Any cost associated with PCI compliance including e-commerce and merchant services costs are not pass-through cost items and shall be included in the contract price. The Kapsch Team recently passed its annual full Payment Card Industry (PCI) audit and is certified PCI Level II compliant. The Kapsch Team further conducts quarterly PCI scans and passed its latest test. The Kapsch Team will be PCI compliant at the start of operations and will remain compliant throughout the contract term. Furthermore, the Kapsch Team understands that all costs associated with PCI compliance including e-commerce fees/costs are the responsibility of the Kapsch Team.</p> <p>Any external stakeholders including but not limited to the Joint Board shall have access to review, view, and examine accounts in accordance with the approved System Access Control Plan. The TCS shall allow at least 10 Joint Board users to examine customer accounts concurrently.</p>		
BO-081	All external internet protocol addresses shall undergo a vulnerability scan at least quarterly by a qualified vendor, pursuant to the PCI DSS Data Security Standard.	X	

		Required	Value Add
Req ID	Back office (Section BO)		
	The TSP shall provide a copy of the current quarterly vulnerability scan report to the Joint Board within 10 business days of request by the Joint Board at any time during the Contract Term.		
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-081 , and this compliance is described below:            Within the BOS application all access is controlled from the application layer via role-driven access. Additionally, The Kapsch Team BOS team recently passed its annual full Payment Card Industry (PCI) audit and is certified PCI Level II compliant.            Quarterly PCI scans are successfully conducted, and third-party annual scans meet or exceed standards. The BOS will be PCI compliant at the start of operations and will remain compliant throughout the contract term. A copy of the report from the quarterly scan will be provided to the Joint Board as requested.</p>		
BO-082	There shall be no direct user access to the BOS database management system by any interactive or system users. All access to the BOS database management solution shall be through BOS middleware. User authentication and access to the BOS database management solution shall be managed by the middleware application services using generic or function-related database connections.	X	
	<p>Note: The Proposer shall describe in this Technical Response Form access to the database system for reporting by system users and interactive (human) users.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-082 , and this compliance is described below:            The BOS controls data access through access authorization by management ensuring only the appropriate personnel have access to any and all data. We have immediate removal of access when personnel terminate employment. We have routine security access auditing data. We have appropriate firewall, VPN and access control systems employed to ensure data security and integrity, together with penetration scanning performed quarterly to ensure the highest available security. All access to the database is protected by industry-proven middleware utilizing our access-level authorization processes. Reports are provided by a reporting system to which access is restricted to authorized users. The reporting system provides the standard set of reports, as well as query capabilities to authorized individuals.</p>		
BO-083	All TCS database management system scheduled jobs shall be executed under a non-interactive account.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-083 , and this compliance is described below:            The BOS solution's database management system scheduled jobs are executed under a non-interactive account which can only be accessed through administrative privileges to set and adjust schedules for the appropriate jobs. In addition, the reporting system allows for the scheduling of report runs at a later time.</p>		
BO-084	The BOS database management solution shall not permit any modifications or deletions of the original Traffic Transactions, Financial Transactions, and Event Transactions stored in the BOS database.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-084 , and this compliance is described below:            As stated previously, the BOS solution provides processing and tracking of all transactional events within the TCS. This provides the ability to reconcile to the original transaction that was created. No original transaction is modified. All changes (through corrections, reversals, and other modification events) are recorded as "change" transactions against the original transaction.</p>		
BO-085	All TCS database management system records shall provide version control and shall be traceable for all components of the TCS. The TCS database management solution audit trail information for each correction entry shall include, at a minimum, the date and time of the change, identification of the person or automated transaction function initiating the change, and reason code or descriptor justifying the change.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-085 , and this compliance is described below:            The BOS database management system records all changes to the database. "Change" transactions, as indicated above, are recorded with reference to the original transaction affected. In addition to the transaction related information, ALL access to database information is recorded with the date, time, and individual making the access. This provides an audit trailing that can be reviewed in the case of suspicious activity, or for audit purposes.</p>		

Req ID	Back office (Section BO)		
BO-086	The TCS database management solution shall be secure and provide automatic credit card industry standard encryption of all credit and debit card data transmitted to the database via customer service representatives or received via the internet.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-086 , and this compliance is described below:                      Credit card information is received and retained in a secure manner, as proscribed by the PCI requirements. The full credit card information is never viewable from the web or by the CSRs that are logged in.</p>		
BO-087	The TCS database management solution shall provide the following: 1) automatic setup, job scheduling, and execution of backup and recovery scripts; 2) real-time diagnostic testing and problem resolution scripts,3) historical performance data and assistance in database server capacity planning; 4) aid in automating, on a24 hours per day, 7 days per week, monitoring of priority events based on critical threshold; 5) management of database schema modifications; and 6) performance tuning capabilities including, but not be limited to server, database, table, index and query levels.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-087 , and this compliance is described below:                      The BOS solution is based on an industry standard database management solution, Microsoft SQL Server. As such, the solution provides all of the standard features requested by the Joint Board.</p>		
BO-088	The Toll System Provider shall provide an enterprise commercial reporting system (ERS) that shall allow the Joint Board or authorized agents, vendors or third parties to view, create or edit reports within the System with qualified and trained staff.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-088 , and this compliance is described below:                      The Kapsch Team uses Tableau for business analytics. Tableau is an enterprise business intelligence solution that provides reports, and web-based dashboards that allow the users to see and understand the data with no programming required. Tableau will allow the Joint Board, vendors, or 3rd parties to view, create, and edit reports within the system.</p>		
	 <p>Figure 3-4 Back Office Transaction Monitor Dashboard</p>	 <p>Figure 3-5 Back Office Detailed Transaction Monitor Report</p>	
BO-089	It is desired that the ERS be a Commercial Off-the-Shelf solution such as Business Objects (includes Crystal reports), Jaspersoft Microsoft SQL Server Reporting Services or Cognos. The Toll System Provider may propose other commercial tools subject to Joint Board approval.		X

		Required	Value Add
<b>Req ID</b>	<b>Back office (Section BO)</b>		
	Proposer Response: [Redacted]		
BO-090	The Toll System Provider shall provide an existing suite of operational, financial, maintenance and other TCS reports as the basis for reporting. The reports shall be updated as required for the States' Parties.	X	
	Proposer Response: [Redacted]		
BO-091	The TCS shall have configuration management tools to manage Software and versioning in the TCS. Note: The Proposer shall indicate in this Technical Response Form the name(s) and version(s) of the reporting tool(s) that the Proposer proposes to use for the Project.	X	
	Proposer Response: [Redacted]		
BO-092	The Toll System Provider shall provide training and access for the Joint Board to prepare its own user-designed, ad-hoc custom queries in addition to predetermined reports.	X	
	Proposer Response: [Redacted]		
BO-093	The ERS shall be an integrated solution covering all report requirements for pre-determined, existing and ad-hoc reporting.	X	
	Proposer Response: [Redacted]		

		Required	Value Add
Req ID	Back office (Section BO)		
	Kapsch fully complies with requirement BO-093 , and this compliance is described below: The Kapsch Team's ERS solution Tableau is an integrated solution that will cover all report requirements for pre-determined, existing and ad-hoc reporting.		
BO-094	The ERS shall provide central administrative control of user roles assignment in the System.	X	
	Proposer Response: Kapsch fully complies with requirement BO-094 , and this compliance is described below: The BOS provides central administrative control over user roles for the entire TCS system. The ERS will access this information when determining the access allowed to a user who has accessed the system through the single sign-on capabilities of the TCS.		
BO-095	The ERS shall provide one of the following electronic report and screen formats: Adobe PDF, HTML, XML, RTF, and Microsoft Office 2010. Any of these products used must have compatibility.	X	
	Proposer Response: Kapsch fully complies with requirement BO-095 , and this compliance is described below: The ERS solution through Tableau provides electronic report and screen formats in Adobe PDF, HTML, XML, RTF, and Excel formats. These are user selectable after the report run has been completed.		
BO-096	The ERS shall provide batch report processing that can run in the background concurrent with other applications. The ERS shall be in a separate layer from the BOS system that processes Transactions for the TCS.	X	
	Proposer Response: Kapsch fully complies with requirement BO-096 , and this compliance is described below: As stated previously, the ERS provides the ability to batch schedule reports to be run at selected time. In addition, upon completion of the batch run, an e-mail notification can be provided to a selected set of users. The batch reports are run from the report server which exists separately from the transaction processing portion of the TCS.		
BO-097	The ERS shall have a standard template for report formats and data formats that will be used for future report templates.	X	
	Proposer Response: Kapsch fully complies with requirement BO-097 , and this compliance is described below: Standard report templates will be available in the ERS solution. In addition, the database schema will be documented and provided so that additional reporting, including ad hoc reports, can be developed. As part of the training course previously mentioned, users will be provided with the methods for creating reports using these available resources.		
BO-098	It is desired that the ERS have a user interface which is browser-based and compatible with the user interfaces used throughout the TCS.		X
	Proposer Response: <b>Kapsch implements Value-Add BO-098, and this compliance is described below:</b> The Kapsch Team shall provide an ERS solution, as described above in BO-089, which provides a browser-based solution, and is compatible with the user interfaces used throughout the TCS/BOS.		
BO-099	The ERS shall have the following capabilities and administrative functions: provide data by report columns, dashboard reporting, reporting calendar for scheduling pre-determined reports, graphical representation capabilities, drill down and sideways capabilities, reporting of data source capture points and the data relationship(s), sort data by report columns, filter tools for search and for reporting purposes, support for segmentation reporting based on excluded criteria, recordkeeping for each report created, which shall include, at a minimum, report owner, date created, date last edited, and a brief description of the report's purpose.	X	
	Note: The TSP shall indicate reports available in the system in its Technical Proposal Response Form.  Proposer Response: Kapsch fully complies with requirement BO-099 , and this compliance is described below: The Kapsch Team's ERS analytics and reporting solution has the capabilities listed to comply with this requirement including providing data by report columns, dashboard reporting, graphical representation capabilities, drill down and sideways capabilities, reporting of data source capture points and the relationships, the		

		Required	Value Add
<b>Req ID</b>	<b>Back office (Section BO)</b>		
	<p>ability to sort data by report columns, filtering tools, segmentation reporting and recordkeeping. The following are examples of the available reports in the system and it not an exhaustive list:</p> <ul style="list-style-type: none"> <li>• Account Summary report</li> <li>• Bank bag cash Report</li> <li>• Class discrepancy Report</li> <li>• Daily Revenue report</li> <li>• Detailed Transactions Report</li> <li>• End of shift collector cash-out report</li> <li>• Hourly Traffic Report</li> <li>• Monthly Cash Reconciliation report</li> <li>• Shift summary report</li> <li>• Transactions by method of payment report</li> <li>• Violation Report</li> <li>• Account Statement report</li> <li>• Bank Summary report</li> <li>• Comprehensive detailed report</li> <li>• Daily Traffic report</li> <li>• Discount Summary Report</li> <li>• Exempt Report</li> <li>• Incident report</li> <li>• Payments report</li> <li>• Transaction report (with summary) based on any combined search key (time period, card number, lane, operator ID etc-)</li> <li>• Transactions Payments Types Summary Report</li> </ul>		
BO-100	The ERS shall allow authorized users to receive regular reports automatically. A user interface shall be provided for the user registration and registration edit functions, together with details of current registrations and report links currently available to the user.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-100 , and this compliance is described below:</p> <p>The ERS solution allows authorized users to receive regular reports automatically, based on batch run scheduling discussed earlier. The authorized users are controlled through the success-level/user control functions, as referenced in BO-094, of the TCS, and used by all functions within the TCS through the single sign-on process. Through the user control functions of TCS, user information and access levels can be managed, including adding, editing, and deleting users and changing their access levels.</p>		
BO-101	It is desired that standardized control data shall be shown on all reports.		X
	<p>Proposer Response:</p> <p><b><i>Kapsch implements Value-Add BO-101, and this compliance is described below:</i></b></p> <p>Each report provided by Kapsch shall include an information block containing the report name and number, the report version number, any parameters supplied to the report (date range, for example), the user executing the report, and the date and time the report was run.</p>		



Req ID

Back office (Section BO)

The screenshot shows a 'Report Criteria' window with a 'Grid View' button. It contains the following information:

Print Time:	05/07/2014 14:38:43	Printed By:	Andrew Peppard
Start Time:	04/01/2014 14:37:54	Status:	All
End Time:	05/07/2014 14:37:54	Priority:	All
Road:	All	Impacts SLA:	All
System Group:	All	Toll Zone:	All
Alarm Code:	All	Lane:	All
Location:	All	Sub-System:	All
		Group Result By:	N/A

Report Description: Shows a summary of alarms per the parameters selected

Page 1 of 8 | Version 1.0 | MOMS Subsystem

Figure 3-6 Examples of Typical Control Data for Reports

BO-102	The ERS shall be configurable to include at least two logos provided by the Joint Board at any time and other facility information such as toll plaza name, facility, or lane numbers and location of the facility.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-102 , and this compliance is described below:                  The standard report format allows an area for the display of the two logos provided by the Joint Board. Depending on the particular report, information will be displayed in the report reflecting other facility information such as toll plaza name, facility, or lane numbers and location of the facility, as required by the report. This information is design into the report as required for the report's consistency.</p>		
BO-103	The TCS shall query data imported and exported to other systems when generating reports. The TCS shall allow for unrestricted and flexible reporting of any and all data. States' Parties shall have complete access to any data in the TCS database. The TCS reports shall be batch, ad hoc, standard, and non-standard.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-103 , and this compliance is described below:                  The TCS, through the ERS, has the ability to query any data in the TCS database. This includes any data imported and exported (such as interoperability data) to other systems when generating reports. The TCS allows for unrestricted and flexible reporting of any and all data, as determined by a user's access and security level. No user will have access to information outside their approved security level. The States' Parties shall have complete access to any data in the TCS database, as controlled by the security levels assigned to the various personnel. As previously stated, the reports can be run as batch, ad hoc, standard, non-standard, and interactive, and can be either the standard reports in the system, or those developed on an ad hoc basis.</p>		
BO-104	The Toll System Provider shall supply a reporting system that will utilize a query and run reports on the TCS. This reports system may be integrated into the TCS or can be an off- the-shelf system. The reports system shall provide reports for phases of Transactions and their movement through the TCS, and shall be capable of being queried using numerous methodologies. The reports system shall provide reports by ad hoc methodologies and through standard reports for Financial Transaction management, performance, and audits, The reports system shall be electronic; be compatible with Microsoft Office 2010 products; provide graphical representations of queries; save and query reports for future use; sort, add, edit or delete filters; and provide dashboards.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-104 , and this compliance is described below:                  As previously stated, the ERS supplied within the TCS provides the ability to run queries and reports against the data in the database, depending on the security level assigned to the individual working with the system. The ERS consists of Tableau, an off-the-shelf systems that will be used within the TCS environment. The BOS solution is equipped with a full-suite of transaction reports designed to monitor, manage, enforce and reconcile transaction processing and, including detailed and summary reports. The reports system will provide reports by ad hoc methodologies and through standard reports for Financial Transaction</p>		

		Required	Value Add
Req ID	Back office (Section BO)		
	management, performance, and audits. As previously stated, the ERS provides reports in many different formats (PDF, RTF, XML, CSV, and Excel). These formats are compatible with the Microsoft Office 2010 products suite. Through the use of these formats, the Report can be saved for querying and future uses.		
BO-105	The TCS shall provide graphical and spreadsheet reports for CSR activity, CSC activity, customer account activity, Transponder fulfillment activities, revenue reports, Transaction reports, financial reports, IVR reports, Violations reports, collections reports, Customer Website activity reporting, Walk-Up Center activity, customer contact reports, and general activity reports of the TCS system.	X	
	Proposer Response: Kapsch fully complies with requirement BO-105 , and this compliance is described below: Kapsch's Solution provides an extensive array of reports providing essential visibility into CSC operations and the activity and status of accounts. These reports have been demonstrated as effective administrative tools by other toll authority customers that use them for monitoring and managing their operations. BOS reports include a wide range of revenue and reconciliation reports and CSR and account activity reports including: transponder fulfillment activities; revenue and reconciliation reports; IVR reports; violation reports; collection reports; website activity reports; WUC activity reports; customer contact reports; and general activity reports.		
BO-106	The TCS shall provide functionality for offering promotions and promotional discounts that include but are not limited to: special pricing for certain customer groups, and prepaid trips on the Bridges. In the case of account holder promotions or discounts, the TCS shall be configured to discount the account on a transaction basis and also based on a configurable number of transactions posted to an account for a specific time period.	X	
	Proposer Response: Kapsch fully complies with requirement BO-106 , and this compliance is described below: The BOS system provides functionality to provide for promotions and promotional discounts, as described above in BO-106. This can take the form of one-time credits, or discount plans. Discount plans are assigned to accounts, and can provide discounts on a per transaction basis, or based on the number of transactions executed (as in a commuter plan).		
BO-107	The Toll System Provider shall have account functionality to designate that vehicles with approved Transponders or License Plates shall be charged a 100% discounted toll rate for trips made through the LSIORB Toll Zones.	X	
	Proposer Response: Kapsch fully complies with requirement BO-107 , and this compliance is described below: The BOS system supports the ability to designate that preapproved vehicles may be assigned a discounted toll rate when passing through a toll zone, based on either their assigned transponder or valid license plate.		
BO-108	The TCS shall identify, resolve, and manage exceptions based on defined data, parameters and Business Rules.	X	
	Proposer Response: Kapsch fully complies with requirement BO-108 , and this compliance is described below: The BOS system provides the ability to identify, resolve, and manage exceptions based on defined data, parameters and Business Rules. Through a user interface, it is possible to clear exceptions from the system. This allows for resolving various situations and provides the means to handle new issues as the Business Rules change. <b><i>The Kapsch team has existing business rules developed and tailored specifically for the LSIORB project.</i></b>		
BO-109	Only authorized personnel of the TCS shall add, update or delete entries on the list of TCS exceptions. A list of all actions of any authorized or unauthorized personnel shall be logged into the TCS and available in exception reports.	X	
	Proposer Response: Kapsch fully complies with requirement BO-109 , and this compliance is described below: Access to the list of TCS exceptions is controlled through the access-level/user controls function of the TCS. Only authorized users will be granted the access-level that will allow them to add, update or delete entries on the list of TCS exceptions. As previously stated, all changes to the system are logged, including who		

		Required	Value Add
<b>Req ID</b>	<b>Back office (Section BO)</b>		
	executed the change and when.		
BO-110	The TCS shall have the configurable capability to handle exceptions by correcting the exception, charging the customer (including merging of Traffic Transactions), or by coding them off. These actions shall be based on the approved Business Rules.	X	
	Proposer Response: Kapsch fully complies with requirement BO-110 , and this compliance is described below: The TCS system will provide the ability to maintain configuration information used handle exceptions including information required to correct the exception, how to charge the customer, or how to code off the error if necessary. Due to auditing requirements, no transaction is changed but instead is appended for proper auditability. These actions will be based on the approved Business Rules.		
BO-111	The TCS shall retain an audit trail of the occurrence of each exception including the time and date, type of exception, triggering event and resolution.	X	
	Proposer Response: Kapsch fully complies with requirement BO-111 , and this compliance is described below: As previously stated, the TCS records all transactions and items which affect them. For the exceptions, all exceptions will be recorded, and changes made to them, who (individual or system) made them, and when they were made (date and time). Standard reports are provided so that auditors may review the information at a later date.		
BO-112	The TCS shall set configurable Business Rules and thresholds for the purpose of managing exceptions and transaction processing as directed by and subject to the approval of the Joint Board.	X	
	Proposer Response: Kapsch fully complies with requirement BO-112 , and this compliance is described below: The LSIORB Business Rules, previously tailored for this project, have clearly identified configurations and thresholds to be reviewed and approved by the Joint Board. The TCS has the capability to set configuration information, based on the approved Business Rules, that will allows for the TCS to detect and manage exceptions, and transaction processing. Through approved users, and a user interface, these parameters can be added, modified, and deleted as necessary.		
BO-113	The TCS shall ensure that only authorized non-revenue Transponders are charged zero dollars for tolls. The TCS shall maintain a Project specific non-revenue account list for the Project.	X	
	Note: For example, Traffic Transactions initiated by drivers holding Transponders that are designated as non-revenue Transponders from an account established with another E-ZPass agency shall not be treated as non-revenue Traffic Transactions in the TCS.  Proposer Response: Kapsch fully complies with requirement BO-113 , and this compliance is described below: The TCS will only apply zero dollars to a transaction generated by a transponder or License Plate that has been assigned to a non-revenue account. These non-revenue accounts are only with the local system. Non-revenue status does not apply to any other account at any other E-ZPass agency, per the Operating Agreement. By SOP, a non-revenue account may only be created upon approval by the Joint Board.		
BO-114	The TCS shall retain records of non-revenue travel and the associated vehicle or Transponder number.	X	
	Proposer Response: Kapsch fully complies with requirement BO-114 , and this compliance is described below: All non-revenue transactions, and any other actions, are recorded in the specific non-revenue account. As with all accounts every transaction and change is recorded along with the whom, and when that effected the change. All of this information is kept for the required period, as with all revenue accounts. This information is available through the standard reporting package for review and audit.		
BO-115	The TCS and the Toll System Provider operations shall prevent customers from being erroneously charged (overcharged, double charged or undercharged).	X	

		Required	Value Add
Req ID	Back office (Section BO)		
	<p>Proposer Response:  Kapsch fully complies with requirement BO-115 , and this compliance is described below:  The TCS and TSP will monitor operations, specifically transaction assignment to accounts and notice generation process to mitigate the instances in which a person is erroneously charged. Through the use of exception processing, those affected transaction (roadside or otherwise) will be captured for review and either automatically corrected or held for manual review and intervention.  The BOS solution provides CSC reports providing essential visibility into the CSC operations. These reports have been demonstrated as effective administrative tools by other toll authority customers that use them for monitoring and managing their operations. CSC reports include a wide range of revenue and reconciliation reports, including transaction reconciliation, notice generation alerts, and a system for review/audit of invoicing and billing.</p>		
BO-116	<p>The Toll System Provider shall provide a lockbox service that is integrated into the TCS and that updates account records in the System when payments are recorded in the System.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement BO-116 , and this compliance is described below:  As stated previously, the Kapsch Team provides an in-house segregated secure lockbox where we handle all of our payment processing. The staff that performs these functions does not cross into other operational areas to ensure segregation of duties, as an audit standard. The lockbox is integrated with the BOS system, updating account records when payments are recorded.</p>		
BO-117	<p>The TCS shall perform automated look-ups for customer name and address acquisition and check them against DMV records through interfaces with services provided by the Toll System Provider. The Toll System Provider shall coordinate access with the Joint Board and integrate directly through the Kentucky and Indiana DMV.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement BO-117 , and this compliance is described below:  The Kapsch Team has developed external interfaces to systems as well as internal interfaces to the BOS solution applications. The BOS solution interface provides external systems access to DMV in order to perform address acquisition through an ICD. The Kapsch Team will coordinate with the Joint Board in integrating directly with the Kentucky and Indiana DMV.</p>		
BO-118	<p>The TCS shall communicate court evidence packages with the courts through the following interfaces: Web Portal, Paper, FTP, USB drive, and CD-ROM.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement BO-118 , and this compliance is described below:  The BOS Solution will add the capability to interface with the local court systems within the Indiana and Kentucky jurisdictions closest to the toll facilities. During the design phase, The TSP will work with the courts, and the Joint Board to establish the procedures as well as the interface for sharing the court packages electronically. In addition, for those jurisdictions not yet automated, a manual set of procedures will be developed according to the courts' needs.  This has been successfully accomplished by the TSP in Texas.</p>		
BO-119	<p>The Toll System Provider shall provide all necessary mailing services for customer invoices and Correspondence services. The Toll System Provider shall ensure that all Customer Statements mailed to the customer are stored in the TCS and available to the customer service representatives. Postage will be reimbursed to the TSP as a Pass-Through Cost Item.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement BO-119 , and this compliance is described below:  The Kapsch Team has successfully developed specific procedures to handle incoming and outgoing mail, including faxes, to ensure that mail is handled responsibly. The mail will be opened, sorted by work type, and batched under dual-control (two staff members present at all times) and routed in accordance with SOPs. Controls will be in place to track work-batch types and custody of payments will be tracked through employee signatures at each transfer point in the process. These procedures will ensure the security of the Joint Board's funds received by the CSC. Customer-related correspondence will be scanned according to documentation security and integrity procedures. The scanned document will be identified with a specific customer or violation account; and as such will be retrievable at any time. After confirmation of the successful scan of the document, the paper document will be archived or disposed of in accordance with the Joint Board's business and retention rules.</p>		

		Required	Value Add
Req ID	Back office (Section BO)		
	In addition, procedures are in place to handle and record outgoing mail. The SOPs developed for the CSC mailroom will be submitted to the Joint Board for its review and approval. Changes to the procedures will also be shared with the Joint Board for review and approval. The Kapsch Team plans to employ the services of a supplier of mail-house services, to ensure the high-volume mail is handled with the timeliness and professional care required for sensitive customer communications. The mail house will handle customer invoices, violation notices, customer statements, and similar high-volume standardized mailings.		
BO-120	The Toll System Provider shall manage Hardware, Software and equipment life cycles to ensure equipment is replaced prior to "end-of-life cycle" or at such earlier time when the manufacturer no longer provides support for the components.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-120 , and this compliance is described below:</p> <p>The Kapsch Team will provide all infrastructures required for the contact center, including phone systems, computers and other hardware requirements, software requirements and all associated utility costs.</p> <p>Software and hardware issues will be identified through the Kapsch Teams' monitoring functions. Depending on the nature of the problem, the issue will be addressed by the appropriate Kapsch Team maintenance staff person. If the issue is software related, resolution will be coordinated through the software support team. For hardware support, the maintenance technician will work to identify and remediate the problem as needed. All such maintenance activity will ensure that equipment is replaced prior to its "end-of-life" as determined by OEM specifications and observed performance while operating as installed on the LSIORB project. The TSP will work with the Joint Board to ensure that planning and execution of a system replacement plan is handled in a timely manner. This will be part of the ongoing management of the system, and will be part of a system upgrade plan that will be reviewed on an annual basis.</p>		
BO-121	The Toll System Provider shall use field-proven Hardware, Software and equipment configurations that have been deployed on toll projects of similar or larger size and complexity, and that support future upgrades to processors, memory, storage, operating system, database and other System components.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-121 , and this compliance is described below:</p> <p>The TCS to be supplied has been built and designed to use field-proven, off-the-shelf Hardware, field-proven Software and tested equipment configurations that are currently deployed on toll projects of similar or larger size and complexity, such as CTRMA. These configurations have been designed to support future upgrades to processors, memory, storage, operating system, database and other System components, as required for growth and end-of-life situations.</p>		
BO-122	The Toll System Provider shall provide an interface from the TCS to the Kentucky DMV and the Indiana DMV. The TCS shall provide an automated license plate file transfer interface to the Indiana DMV and the Kentucky DMV for look-up and return information for the registered owner. The methodology used to achieve this interface shall be at the discretion of the Toll System Provider. The TCS shall track all files transferred to each DMV with which it interfaces and track how many files were transferred successfully resulting in a license plate return and address, and also how many requests were returned unsuccessfully.	X	
	<p>Note: The Kentucky and Indiana DMV support automated look-ups for outside organizations that successfully apply. Both Indiana and Kentucky allow multiple owners to be associated with a single vehicle and license plates stay with the prior owner when a vehicle is sold or otherwise transferred.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement BO-122 , and this compliance is described below:</p> <p>The Kapsch Team has successfully developed external interfaces to other DMVs, directly and through Nlets. This knowledge will be utilized to build the direct interface to the Indiana and Kentucky DMV systems. The Kapsch Team will work with the Joint Board to acquire the approvals required to interface directly to these DMV systems. Once the interfaces have been developed and tested, the data will flow to/from the BOS using existing database tables and management protocols to control the flow of information and the processing workflow.</p>		
BO-123	The Toll System Provider shall provide a TCS that includes Transponder inventory and fulfillment application services. The TCS Transponder inventory and fulfillment services shall include Transponder purchasing, distribution, tracking, warranty data, returns to manufacturer, and reporting interfaced with the INDOT procurement process. The TCS shall import Transponder manifest lists from common file formats to be used in the TCS without additional manipulation. The TCS shall include bar code processing which results in automatic entry of Transponder identification numbers into the TCS. The TCS shall track the full life cycle of a Transponder from the time it is purchased through allocation to each of the centers for distribution, through the fulfillment process and finally through the end life of the Transponder when it is removed from inventory. The TCS shall provide a report of the total number of Transponders, the locations of those Transponders, where	X	

		Required	Value Add
<b>Req ID</b>	<b>Back office (Section BO)</b>		
	<p>the Transponders are in the distribution process, the customer account to which they have been assigned, shipping information, and information for final delivery to the customer. The inventory process shall account for the locations (both physical and within the distribution process) of all Transponders during their life cycle. The TCS shall produce reports that detail the number of Transponders distributed, the number of Transponders requested to date, the number of Transponders fulfilled, the number of Transponders shipped, and the number of requests in progress. The TCS shall track and provide reporting for warranty information on the Transponders, returns to the manufacturer warranty expiration dates, and number of Transponders in inventory.</p>		
	<p>Proposer Response:  Kapsch fully complies with requirement BO-123 , and this compliance is described below:  As Kapsch is the current provider of the Transponders for the LSIORB project, and all of E-ZPass, we are familiar and comfortable with reporting to the necessary requirements imposed by any INDOT procurement process.  The BOS solution has a robust Tag Inventory and Management System to accurately track transponder inventory from receipt to disposal. In addition, the Operations Team has developed, deployed, and adhered to high operational standards that will be employed for distributing, tracking, and managing the Joint Board's transponder inventory. The BOS solution supports the processing of fulfillment requests via various fulfillment methods. Customer fulfillment requests received either directly from the customer (via web) or by CSR's (via contact center) and retail fulfillment requests can be processed. The BOS system also provides a full-featured transponder inventory management function. Customer service staff will be trained on the proper transponder inventory management procedures. These procedures will incorporate QA standards and performance metrics that will ensure tracking and accountability for each transponder-related activity. The following services are related to transponder management:</p> <ul style="list-style-type: none"> <li>• Employ both preventative (i.e. physical access controls, cameras, etc.) and detective (i.e. periodic inventory counts/audits, tag inventory reports, etc.) controls to ensure the safeguarding of transponders.</li> <li>• Secure transponder inventory management and storage, including managing new shipments of transponders, warranty management of defective transponders, disposal of returned/expired transponders, inventory, and audit processes.</li> <li>• Employ a perpetual review inventory management system, constantly monitoring inventory levels, placing new orders when a pre-established re-order point is met.</li> <li>• Employ a hybrid of two Model Output Statistics (MOS) techniques in forecasting transponder demand. The first technique historically tracks how a forecast model performs compared to real results and accounting for any deviations in future forecasts. The second technique uses regression analysis to identify correlations between demand and variables that correlate to increase in demands such as road openings and/or marketing campaigns.</li> <li>• Perform tracking functions for malfunctioning transponders that are returned to the manufacturer</li> <li>• Assign and distribute transponders to new accounts.</li> <li>• Track the status of transponders assigned to customers.</li> <li>• Manage transponder returns for closed accounts and provide appropriate disposition of transponders that are returned when an account is closed.</li> <li>• Support multiple transponder distribution channels and locations as needed. Manage and track transponders that are deployed to remote locations/special events and retail locations.</li> <li>• Report on tag fulfillment using the BOS system generated reports to identify transponder inventory levels, aging of transponders assigned to customers, burn rate, inventory coverage (90-day outlook for re-orders) and support inventory reconciliation efforts.</li> </ul>		
BO-124	<p>The Toll System Provider shall fully audit and reconcile Traffic Transactions throughout the life of the Traffic Transaction. The TCS shall provide for the ability to fully reconcile the flow of Traffic Transactions throughout the system to each end state of the Traffic Transactions from receipt of roadside activity through the TCS, through its final disposition. The TCS shall be fully auditable and provide robust reconciliation processes for customer service representative transactions, ETC Transactions, video Transactions, account balances, front counter and call center activity, adjustments, credit card Transactions, and payments. The methodology used for this reconciliation process shall be at the discretion of the Toll System Provider but shall provide auditable insight into each component of the TCS and into each step of the Transaction. The Toll System Provider shall have an auditable system to track all payments and any Financial Transactions as well. The TCS shall be required to reconcile Traffic Transactions with payment collections. Reports shall be generated for auditable and logical Transaction and payment reconciliation.</p>	X	

Req ID

Back office (Section BO)

Note: The Toll System Provider shall provide in this Technical Response Form a Traffic Transaction flow and Financial Transaction flow that allows the Joint Board to conduct traffic and revenue audits from the roadside through the account management system including interoperability partners and external third parties, and also the same in the reverse direction. An audit trail shall be provided by the Toll System Provider to demonstrate the flow and disposition of all Transactions.

Proposer Response:

Kapsch fully complies with requirement BO-124 , and this compliance is described below:

The BOS Solution contains an extensive array of reports providing essential visibility into the operations and the activity and status of accounts. These reports have been demonstrated as effective administrative tools by other toll authority customers that use them for monitoring and managing their operations. Debt Manager 9 software reports include a wide range of revenue and reconciliation reports and CSR and account activity reports.

In addition, the IVR/telephony system (Interactive Agent) provides real time reporting of all contact center activities, including queues, skills, teams, groups, and more. Using a browser-based interface, supervisors and administrators can view the data they need from any location. The platform also maintains historical data of all call-related and agent-related events in the system to provide historical reports, which can be viewed and filtered in numerous ways. Additionally, the database schema is open, enabling customers to create custom reports using standard report generation tools.

The BOS Solution will further be equipped with a full-suite of violations reports designed to monitor, manage, enforce and reconcile violation processing and enforcement activities, including detailed and summary reports for violations and citations, as well as enforcement activities such as court action reports.

A transaction flow diagram and potential audit trail will be provided during the design phase upon completion of the development of the Business Rules.

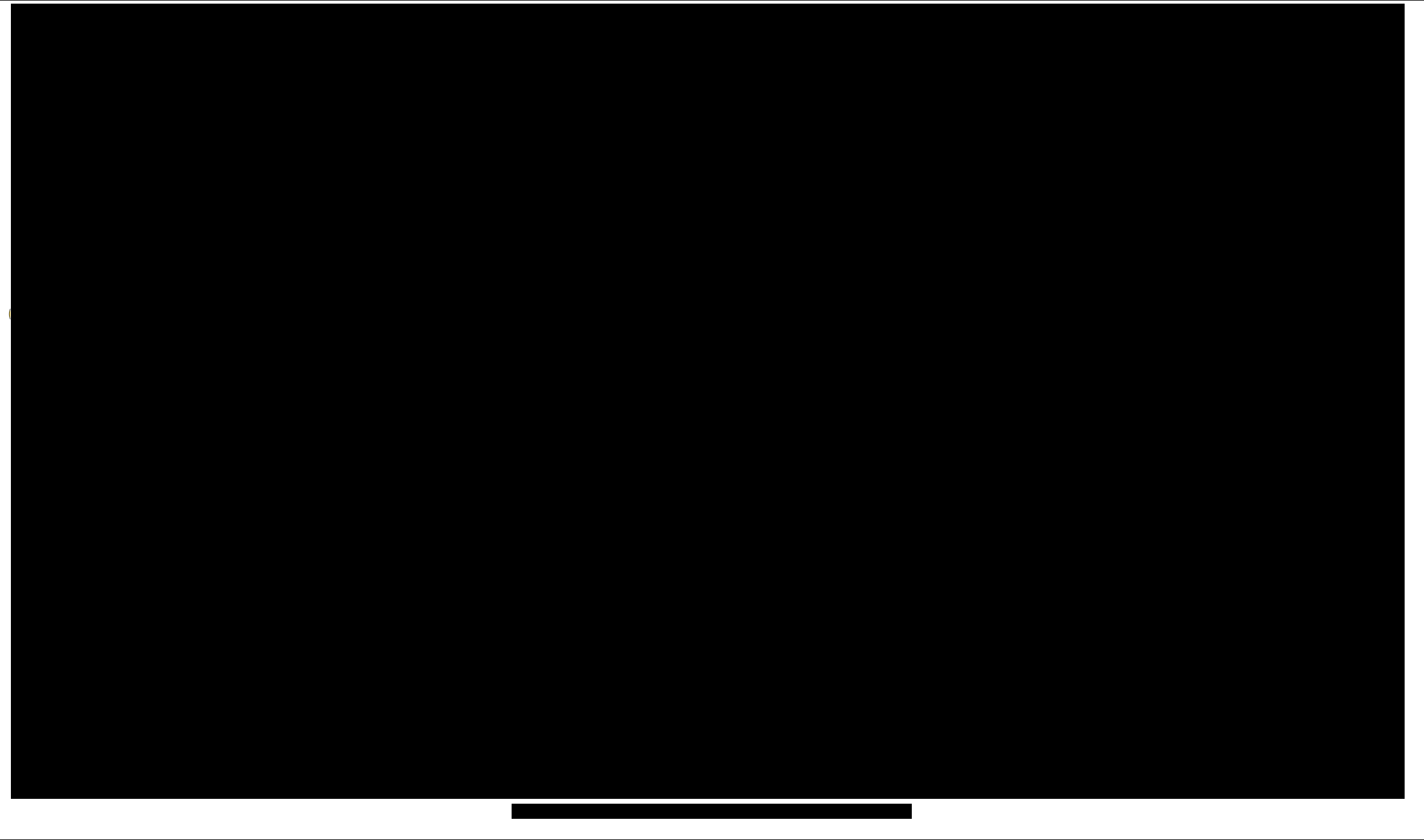
**End-to-End Transaction Processing Flow**

Transactional data from the roadside enters the roadside processor where the transaction is filtered based on it being an image-only transaction or an ETC transaction, which also includes an image. Transactions that are image-only progress to image review. Transactions with an AVI read are progressed to transaction processing. AVI transactions that are either home accounts or participating reciprocal inter-agency accounts are posted and cleared. In the event the transponder cannot be cleared through inter-agency rules, the transactions is then treated as an image transaction and sent to image review.

Transactions with acceptable AVI data with low account balances trigger a letter to notify the customer. Images that are not human-readable are coded off as uncollectable. Image-only transactions linked to an acceptable home account are posted and cleared, and a warning letter is sent to the customer notifying the transponder is not being read.

Image-only transactions not linked to a home account are matched against E-ZPass accounts, and other interoperable agencies. If the transactions are linked to any of these, it is posted and cleared. If it is not, the address for the registered owner of the vehicle is sought through the DMV. A holding period is applied to the address look-up, and if exceeded, the transaction is posted as uncollectable.

If a registered owner address is received through the DMV look-up process, a notice is sent to the customer to pay by mail. If paid, the transaction is posted and cleared. If the notice is not responded to, a violation notice is sent to the customer. If paid, the transaction is posted and cleared. If the violation notice is not responded to, the violation enters the violation process. An aging period is applied to a transaction in the enforcement process, and if exceeded, the transaction is posted as uncollectable. When any notice is sent to a customer, and the mail is returned, a skip trace process is used to find a new or correct mailing address. If the mail continues to be returned after an aging process, the transaction is posted as uncollectable. For more information on Flow of Funds, please see FR-04.

Req ID	Back office (Section BO)	Required	Value Add
			
BO-125	<p>The Toll System Provider shall provide a TCS that includes a retail distribution network for Transponders, Transponder reloading, account replenishment, and toll payment services such as would occur at local grocers, pharmacies, etc. The TCS shall support at least one type of such service such as kiosks, interaction with store clerks, or use of gift card type packages. The TSP shall be responsible for entering into all necessary agreements with merchants participating in the retail distribution network. All such agreements shall be assignable to the Joint Board or its designee.</p>	X	



		Required	Value Add
<b>Req ID</b>	<b>Back office (Section BO)</b>		
	Note: Proposer shall specify the type or types of retail distribution networks to be provided with the TCS.  Proposer Response: Kapsch fully complies with requirement BO-125 , and this compliance is described below: The Kapsch Team operations staff will support the distribution of tags from various retail locations. Retailers will receive an inventory of tags from the CSC, and process online sales transactions updating the BOS system in real-time. The Tag Fulfillment Supervisor will be responsible for processing inventory replenishment requests and notifying the Joint Board when a retail sales contract has been executed or a request for replenishment has been received. A Retail Tag Order Form will be submitted to the Tag Fulfillment Supervisor who will oversee tag kit creation and shipping of order to the retail location. Tag kits will be created in the BOS system following the SOPs for Retail Tag Sales. The Kapsch Team will also support remote retail operations, allowing customers to manage changes to their accounts (make payments, obtain transponders) via an alternate channel. Currently customers have the ability to manage their accounts remotely through a retail agreement with Ace Cash Express stores nationwide, as well as pay options available through MoneyGram Western Union, and Quick Collect. The Kapsch Team is investigating alternative retail locations to be approved by the Joint Board. Specifically, Kapsch is currently in discussion with a leading provider of merchandise distribution, enabling the sale transponders and replenishment of accounts across a network of retailers. This will allow the Joint Board to establish a tiered program, over time, to expand the availability and penetration of transponders while expanding the network of replacement points, including cash. This will enable a retail program that can start locally, expand regionally, and potentially statewide throughout Kentucky and Indiana. All agreements with distribution and replacement networks will be in approval and cooperation of the Joint Board and the Marketing Firm.		
BO-126	The TCS shall have functions to support a cash-replenishment network to provide cash based replenishments in retail locations and shall describe the customer experience for the cash replenishment network in the System Documentation. The BOS Operations Plan shall identify any differences in Business Rules to be applied at the retail locations.	X	
	Note: The Proposer shall describe in this Technical Response Form the customer experience for the cash replenishment network.  Proposer Response: Kapsch fully complies with requirement BO-126 , and this compliance is described below: The Kapsch Team shall use an existing retail agreement with Ace Cash Express/MoneyGram to process payments nationwide and tag purchase and distribution for LSIORB toll clients. Kapsch shall work with the Joint Board to identify potential retail partners locally for the purpose of tag distribution and sales. The customer experience from the retail replenishment networks is an experience similar to the WUC locations. The customer will only need their account information to process replenishments, invoices, and violation payments. The BOS Operations Plan shall identify any differences in Business Rules applied at external retail location(s).		
BO-127	The Toll System Provider shall provide financial and operations reporting for the cash based replenishments network.	X	
	Note: The Toll System Provider shall describe the interface with the cash replenishment network provided and the operations and financial reporting for the interface in the System Documentation.  Proposer Response: Kapsch fully complies with requirement BO-127, and this compliance is described below: Currently, the interface to the cash replenishment network works similarly to a credit card payment processor. Customers receive their notices indicating that replenishment is necessary. The notices are marked with the appropriate barcoded information required by the replenishment network. The customer takes the notice to a network member, and makes their payment. The information is captured and transmitted to the BOS through a predefined interface and the credits are applied to the correct user account.		
BO-128	It is desired that the cash-replenishment network provide functionality for customers to purchase transponders, pay invoices or Violations and support balance inquiries on customer accounts.		X
	Note: The Proposer shall describe in this Technical Response Form the customer experience for the cash replenishment network.		

		Required	Value Add
Req ID	Back office (Section BO)		
	<p><b>Proposer Response:</b>  <b><i>Kapsch implements Value-Add BO-128, and this compliance is described below:</i></b>  Kapsch shall provide a cash-replenishment network, as stated in BO-126, with functionality for customers to purchase transponders, pay invoices or Violations, and support balance inquiries on customer accounts.  Through the cash replenishment network, the customer can make a replenishment payment, pay an invoice, or pay a violation notice. This is accomplished through encoding the proper account information onto the particular notice that the customer will take to a network member. The information is captured at time of payment and relayed to the BOS along with the payment information.  Kapsch shall support (through existing interfaces) the ability for the processing of replenishment payments through local businesses (such as MoneyGram locations, Walmart, etc.). During the initial establishment phase of the system, the appropriate local establishments can be added to this capability.</p>		
BO-129	It is desired the Toll System Provider provide functionality to allow customers without an account to pay for tolls prior to the issuance of a Customer Statement.		X
	<p><b>Proposer Response:</b>  <b><i>Kapsch implements Value-Add BO-129, and this compliance is described below:</i></b>  Kapsch shall provide functionality to allow customers without an account to pay for tolls prior to the issuance of a Customer Statement either through the customer website, at the Walk Up Center, or over the phone with a CSR. To make such a payment, they would need to enter their License Plate, payment information, in addition to date range covering the toll transactions that they are wanting to pay. .</p>		
BO-130	The Toll System Provider is responsible for DMV lookup for all other States and Provinces. The TCS shall track all files transferred to each DMV with which it interfaces and track how many files were transferred successfully resulting in a license plate return and address, and also how many requests were returned unsuccessfully. The Toll System Provider shall also interface with Nlets through an existing INDOT agreement if existing access to Nlets is not included in the Proposer's response. Proposer shall establish and maintain all required certifications to utilize the Nlets interface regardless of which access is incorporated into the proposal.	X	
	<p>Note: The Proposer shall describe its existing out of KY or IN State and Province lookup process in its Technical Response Form. The Proposer may use an existing Nlets interface if already available and functional within the Proposer's system.</p> <p><b>Proposer Response:</b>  Kapsch fully complies with requirement BO-130 , and this compliance is described below:  Kapsch shall use its existing agreement through Nlets to obtain DMV lookup information for all states and provinces to obtain DMV address information for states beyond Kentucky and Indiana. Please refer to the flowchart in BO-124 for additional summary of the processes within the BOS.</p>		


**Customer Service Center Requirements**

Req ID	Customer Service Center (Section CS)	Required	Value Add															
CS-001	<p>The Toll System Provider shall supply appropriate staffing for a fully functional and operational CSC to support tolling operations of the Project. These services shall include, but are not limited to, 1) account management and maintenance services, 2) Customer Website services, 3) mailroom operations, 4) customer communications through phone, email and or text, 5) interoperability and reciprocity, 6) internal or external financial and lockbox operations, 7) ETC and image review processing, 8) Transponder inventory and fulfillment, 9) Violation processing, 10) internal or external administrative and court collections processing, 11) Walk-up Center operations, 12) quality assurance and quality control, 13) training, 14) management, oversight and personnel services, 15) reporting, 16) security of information, and 17) equipment in order to successfully collect toll revenue for toll customers. The Joint Board shall have no responsibility for increases or decreases in actual levels of equipment, but the Joint Board will pay for some limited services and facilities using Pass-Through Cost Items as defined in the Contract.</p>	X																
	<p>Proposer Response:                      Kapsch fully complies with requirement CS-001 , and this compliance is described below:                      Kapsch team member MSB is proposing staff and services to support a fully functional and operational CSC. We will leverage our successful experience from similar projects to ensure the highest levels of performance and accountability of revenue, transponders, and other important assets.</p> <p style="text-align: center;">Table 4-1 Project References and Respective Services</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Client:</th> <th style="width: 20%;">Central Texas Regional Mobility Authority (CTRMA)</th> <th style="width: 20%;">Cameron County Regional Mobility Authority (CCRMA)</th> <th style="width: 20%;">Northeast Texas Regional Mobility Authority (NETRMA)</th> <th style="width: 25%;">Camino Real Regional Mobility Authority (CRRMA)</th> </tr> </thead> <tbody> <tr> <td><b>Project Type:</b></td> <td>CSC/Video Billing Operations Violation Processing System (VPS) Collection Services</td> <td>CSC/Video Billing Operations Violation Processing System (VPS) Collection Services</td> <td>CSC/Video Billing Operations Violation Processing System (VPS) Collection Services</td> <td>CSC/Video Billing Operations Violation Processing System (VPS) Collection Services</td> </tr> <tr> <td><b>Project Description:</b></td> <td>                     Provider supports all CSC and back office activities associated with electronic toll collection such as:                      - account management                      - call processing,                      - website services,                      - walk-up center operations                      - financial management,                      - interoperability and reciprocity,                      - transaction processing,                      - image review/video billing                      - reconciliations,                      - pay-by-plate transactions,                      - invoice processing,                      - staffing/mgmt management services                      - QA/QC                      - training                      - violation processing,                      - collection services,                      - collection services,                 </td> <td>                     Provider supports all CSC and back office activities associated with electronic toll collection such as:                      - account management                      - call processing,                      - website services,                      - financial management,                      - interoperability and reciprocity,                      - transaction processing,                      - image review/video billing                      - reconciliations,                      - pay-by-plate transactions,                      - invoice processing,                      - staffing/mgmt management services                      - QA/QC                      - training                      - violation processing,                      - collection services,                      - court collection process                 </td> <td>                     Provider supports all CSC and back office activities associated with electronic toll collection such as:                      - account management                      - call processing,                      - website services,                      - financial management,                      - interoperability and reciprocity,                      - transaction processing,                      - image review/video billing                      - reconciliations,                      - pay-by-plate transactions,                      - invoice processing,                      - staffing/mgmt management services                      - QA/QC                      - training                      - violation processing,                      - collection services,                      - court collection process                 </td> <td>                     Provider supports all CSC and back office activities associated with electronic toll collection such as:                      - account management                      - call processing,                      - website services,                      - financial management,                      - interoperability and reciprocity,                      - transaction processing,                      - image review/video billing                      - reconciliations,                      - pay-by-plate transactions,                      - invoice processing,                      - staffing/mgmt management services                      - QA/QC                      - training                      - violation processing,                      - collection services,                      - reporting                 </td> </tr> </tbody> </table>	Client:	Central Texas Regional Mobility Authority (CTRMA)	Cameron County Regional Mobility Authority (CCRMA)	Northeast Texas Regional Mobility Authority (NETRMA)	Camino Real Regional Mobility Authority (CRRMA)	<b>Project Type:</b>	CSC/Video Billing Operations Violation Processing System (VPS) Collection Services	CSC/Video Billing Operations Violation Processing System (VPS) Collection Services	CSC/Video Billing Operations Violation Processing System (VPS) Collection Services	CSC/Video Billing Operations Violation Processing System (VPS) Collection Services	<b>Project Description:</b>	Provider supports all CSC and back office activities associated with electronic toll collection such as: - account management - call processing, - website services, - walk-up center operations - financial management, - interoperability and reciprocity, - transaction processing, - image review/video billing - reconciliations, - pay-by-plate transactions, - invoice processing, - staffing/mgmt management services - QA/QC - training - violation processing, - collection services, - collection services,	Provider supports all CSC and back office activities associated with electronic toll collection such as: - account management - call processing, - website services, - financial management, - interoperability and reciprocity, - transaction processing, - image review/video billing - reconciliations, - pay-by-plate transactions, - invoice processing, - staffing/mgmt management services - QA/QC - training - violation processing, - collection services, - court collection process	Provider supports all CSC and back office activities associated with electronic toll collection such as: - account management - call processing, - website services, - financial management, - interoperability and reciprocity, - transaction processing, - image review/video billing - reconciliations, - pay-by-plate transactions, - invoice processing, - staffing/mgmt management services - QA/QC - training - violation processing, - collection services, - court collection process	Provider supports all CSC and back office activities associated with electronic toll collection such as: - account management - call processing, - website services, - financial management, - interoperability and reciprocity, - transaction processing, - image review/video billing - reconciliations, - pay-by-plate transactions, - invoice processing, - staffing/mgmt management services - QA/QC - training - violation processing, - collection services, - reporting		
Client:	Central Texas Regional Mobility Authority (CTRMA)	Cameron County Regional Mobility Authority (CCRMA)	Northeast Texas Regional Mobility Authority (NETRMA)	Camino Real Regional Mobility Authority (CRRMA)														
<b>Project Type:</b>	CSC/Video Billing Operations Violation Processing System (VPS) Collection Services	CSC/Video Billing Operations Violation Processing System (VPS) Collection Services	CSC/Video Billing Operations Violation Processing System (VPS) Collection Services	CSC/Video Billing Operations Violation Processing System (VPS) Collection Services														
<b>Project Description:</b>	Provider supports all CSC and back office activities associated with electronic toll collection such as: - account management - call processing, - website services, - walk-up center operations - financial management, - interoperability and reciprocity, - transaction processing, - image review/video billing - reconciliations, - pay-by-plate transactions, - invoice processing, - staffing/mgmt management services - QA/QC - training - violation processing, - collection services, - collection services,	Provider supports all CSC and back office activities associated with electronic toll collection such as: - account management - call processing, - website services, - financial management, - interoperability and reciprocity, - transaction processing, - image review/video billing - reconciliations, - pay-by-plate transactions, - invoice processing, - staffing/mgmt management services - QA/QC - training - violation processing, - collection services, - court collection process	Provider supports all CSC and back office activities associated with electronic toll collection such as: - account management - call processing, - website services, - financial management, - interoperability and reciprocity, - transaction processing, - image review/video billing - reconciliations, - pay-by-plate transactions, - invoice processing, - staffing/mgmt management services - QA/QC - training - violation processing, - collection services, - court collection process	Provider supports all CSC and back office activities associated with electronic toll collection such as: - account management - call processing, - website services, - financial management, - interoperability and reciprocity, - transaction processing, - image review/video billing - reconciliations, - pay-by-plate transactions, - invoice processing, - staffing/mgmt management services - QA/QC - training - violation processing, - collection services, - reporting														

CS-002	The CSC shall be staffed with personnel that are experienced and knowledgeable in toll industry practices, and the Toll System Provider shall provide trained, competent and courteous customer service staff to assist individuals and businesses in managing their toll accounts. The CSC shall provide all services required to enable customers to pay tolls by use of a Transponder or image capture of their license plate or through the Violations and collections process; including accounts from interoperable toll agencies, and the resolution and payment of toll bills, notices and collection of civil penalties for unpaid tolls.	X	
	Proposer Response: <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div>		
CS-003	Customer service representatives shall provide all services related to toll accounts for toll customers, to include account opening, replenishments, account closings, answering inquiries, processing Violations, and handling collections or billing issues.	X	
	Proposer Response: <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div> <div style="background-color: black; height: 10px; width: 100%;"></div>		
CS-004	The Toll System Provider shall provide customer service representatives who can provide basic customer service functions over the telephone, in person, or via mail or the web, for all account types. The Toll System Provider shall provide CSRs who can perform customer service tasks include opening accounts, retrieving account information, updating account information, vehicle information, replenishing accounts, changing credit card or replenishment sources, issuing new or replacement Transponders, accepting returns of Transponders, closing accounts, establishing and billing postpaid accounts, refunding errant charges or remaining balances on closed accounts and assisting customers with troubleshooting. Additional tasks such as cash collection, change runs, inventory control, etc. shall be provided as necessary to provide a complete CSC operational facility. Oversight of human resource issues such as time clocks, appropriate conduct and attire are the sole responsibility of the Toll System Provider.	X	
	Proposer Response: Kapsch fully complies with requirement CS-004 , and this compliance is described below:		

	<p>Kapsch will provide the staff and services to support required CSC functions to include performing the front office and back office operations. The Kapsch Team will leverage its successful experience from similar projects to ensure the highest levels of performance and accountability.</p> <p>The Kapsch Team has existing Standard Operating Procedures (SOPs) and Training Plans for customer service and violations processing that shall be used as a baseline for CSC operations. These plans and procedures are flexible, reliable, and have proven effective in the implementation and maintenance of similar operations. In combination with applicable business rules, BOS system functionality, and system requirements, these plans and procedures will be tailored to the CSC requirements and be submitted for approval prior to implementation. Once in place, the operations plan and controls will ensure that milestones are met and performance is delivered. The Kapsch Team understands that analysis, schedule, budget, and reporting are critical to this project. The Team will routinely monitor and report actual performance against key metrics so that the Joint Board has visibility into operational performance and service levels. Additionally, oversight and management functions such as time management, schedule adherence, employee conduct, attire, and adherence to policies and procedures will be performed by the Kapsch Team with report and communication as needed to the Joint Board.</p>		
CS-005	The TCS and the Toll System Provider's policies and procedures shall support first contact resolution of any customer issues.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-005 , and this compliance is described below:</p> <p>The Kapsch Team policies and procedures empower agents to make decisions and perform functions to handle calls without the need for escalations. If a call does require escalation then policies are designed to have that call resolved through the escalation process without the need for a customer to call back, resolving their issue with a single contact.</p> <p>Disputes, interoperability research requests and other customer inquiries that require deferment (in order to research issues) are processed by opening a case on the customer's behalf. Once those requests are completed, the Kapsch Team initiates a follow-up contact with the customer, so that the issue/request is handled without the need for the customer to follow-up.</p>		
CS-006	The Toll System Provider shall provide a toll free number for inbound customer calls. The Toll System Provider shall minimize transfers and follow-up calls.	X	
	<p>Note: The Proposer shall demonstrate in this Technical Response Form how its policies and procedures will satisfy this requirement.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-006 , and this compliance is described below:</p> <p>Kapsch policies and procedures empower agents to make decisions and perform functions to handle calls without the need for escalations or transfers to a different agent. If a call does require escalation then, again, policies are designed to have that call resolved through the escalation process without the need for a customer to call back, resolving their issue with a single contact. Agents are trained to handle all account management/maintenance activities without the need to escalate or transfer calls.</p> <p>The BOS system gives the agents a full view of customer account and historical information in order to resolve the customer contact without the need to transfer or escalate the call.</p> <p>Some account activities, such as disputes or interoperability research requests, require some additional work in order to resolve, as customer will need to provide additional information and/or contact with a separate agency. In these instances this work is processed by opening a case on the customer's behalf. Once those requests are completed, a follow-up contact is initiated with the customer, so that the issue/request is handled without the need for the customer to follow-up.</p> <p>Kapsch, through Joint Board approved business rules, shall maintain policies and procedures that empower agents to make decisions and perform functions to handle calls without the need for escalations. If a call does require escalation then, again, policies are designed to have that call resolved through the escalation process without the need for a customer to call back, resolving their issue with a single contact. Agents are required to handle all account management/maintenance activities without the need to escalate or transfer calls. Kapsch's BOS system gives the agents full view of customer account and historical information in order to resolve the customer contact without the need to transfer or escalate the call.</p> <p>Some account activity, such as disputes or interoperability research requests require some additional work in order to resolve, as customer will need to provide additional information and/or contact with a separate agency. In these instances this work is processed by opening a case on the customer's behalf. Once those requests are completed, Kapsch initiates a follow-up contact with the customer, so that the issue/request is handled without the need for the customer to follow-up themselves.</p> <p>The proposed solution includes a toll-free number for inbound customer service calls. This number will be publicized on patron materials and the website.</p>		
CS-007	The Toll System Provider shall provide customer service staff access to a complete customer interaction history for all payment channels to support the resolution of a customer inquiry.	X	

	<p>Proposer Response: Kapsch fully complies with requirement CS-007 , and this compliance is described below: The BOS system allows for customer service staff to view customer interaction and account activity history which includes contact notes, payments from all channels including one-time and auto replenishment, notices, statements, transponder history, address history, and other account management activity, in order to support customer inquiries and provide additional account information and maintenance services to the customer.</p>		
CS-008	The Toll System Provider shall maintain a written record of all customer interactions with the BOS so that TSP shall maintain a complete history of account information.	X	
	<p>Proposer Response: Kapsch fully complies with requirement CS-008 , and this compliance is described below: The BOS system allows customer service representatives to add notes to the account to document the customer inquiry and any actions or results of that inquiry. Other account activities are automatically generated by the system including toll transactions, auto replenishment, and automatic notices (such as low balance). The BOS system allows for customer service staff to view customer interaction and account activity history which includes contact notes, payments, notices, statements, transponder history, address history, and other account management activity, in order to support customer inquiries and provide additional account information and maintenance services to the customer.</p>		
CS-009	The Toll System Provider shall track and categorize all customer communications by customer, type of communication, dispute status and type of problem as recorded in the TCS.	X	
	<p>Proposer Response: Kapsch fully complies with requirement CS-009 , and this compliance is described below: The BOS system allows for customer service communication to be categorized by customer (account number), communication type (notifications, disputes, call, e-mail, web, chat, etc.), dispute status and other cases (issues). Additionally, open cases (communications) can be tracked and reported on to ensure that issues are being worked and resolved in a timely manner.</p>		
CS-010	The Toll System Provider shall access data to handle communications, interactions, and workflow management within the TCS.	X	
	<p>Proposer Response: Kapsch fully complies with requirement CS-010 , and this compliance is described below: The agents and management staff of the CSC will have access through the BOS system to have full view of customer communications, interactions, payment history and other transactions processed. Additional data is available through reporting and system alerts that will give management team full view into the processes and workflows that occur in updating accounts and processing of transactions.</p>		
CS-011	The Toll System Provider shall provide a consistent customer experience across all payment channels.	X	
	<p>Note: Proposer shall describe in this Technical Response Form how its policies and procedures demonstrate that it will provide a consistent customer experience for customers interacting with the CSC to make payments in any of the available methods</p> <p>Proposer Response: Kapsch fully complies with requirement CS-011 , and this compliance is described below: All customer service representatives follow standard operational procedures to ensure a consistent experience. At the organizational level, we have implemented a Continuous Improvement Performance Management Program to effectively and efficiently manage our performance including customer contact metrics. Not only are our agents trained to work efficiently but also to take a disciplined approach with each customer. Customers will have the ability to make payments via checks, money orders, cash, credit card and debit cards, and ACH payments in person at walk-up centers. Each contact is designed to be the same as the last, pleasant, effective and efficient with minimal wait times. All our agents are trained in de-escalation techniques and we have procedures in place to deal quickly with any agitated or angry patron. Our retail partners are contractually required to maintain professional and courteous customer service. The Kapsch Team has established Standard Operating Procedures (SOPs) and Training Plans for customer services, including the acceptance and appropriate processing of all customer payments. These plans and procedures are flexible, reliable and have proven effective on other similar toll operations. These plans and procedures will be tailored to the LSIORB requirements and submitted to the Joint Board for approval prior to implementation. These payments will be handled per the Joint Board's business rules and in accordance with the established business practices of handling funds. CSC staff is monitored for adherence to the approved SOPs, and performance metrics. Payments are applied to customer accounts immediately upon payment entry with the ability to apply fees for returned checks or handle other payment exceptions</p>		
CS-012	If the Proposer's system architecture is such that the images are stored at the Roadside System, it is desired that the Toll System Provider provide the ability to		X

	retrieve images and Transactions from the Roadside System for any customer communications.		
	<p>Proposer Response:  <b>Kapsch implements Value-Add CS-012, and this compliance is described below:</b>  Kapsch shall provide the TCS with the ability to quickly access all relevant transaction information and images for use in timely resolution of issues during customer communications.</p> <p>All Customer Service Representatives shall have real-time access to the Back Office System and have access credentials which permit them to search for and call up any relevant Traffic Transactions and associated images to assist in resolving customer queries and communication. These Traffic Transactions, associated images, and associated RS subsystem transactions are fully cross-referenced and remain at the BOS site for the required retention time periods. This prompt CSR access to relevant transaction information results directly from the Kapsch architectural decision to:</p> <ul style="list-style-type: none"> <li>• Co-locate the Facility Host and the Back Office System, and,</li> <li>• To concentrate all quick-retrieval and archival storage at that location</li> </ul> <p>All of Kapsch's previous toll system deployments include a Facility Host which accepts data uploads from all Toll Zone Controllers and consolidates transaction-related data and images in that single facility-specific location for further processing and storage. Kapsch's LBJ toll system deployment in the Dallas area is but one example. This permits efficient use of processing and storage resources, as well as providing TSP personnel with prompt access to transaction-relevant data.</p>		
CS-013	Toll System Provider shall maintain a record of all customer complaints and disputes. All contacts with customers regarding complaints and disputes shall be entered in a customer complaint log and linked to the customer's account, and all subsequent contacts, responses and actions shall be noted in the record, through resolution and final disposition. The record shall identify the customer, means of contact, date, time, issue, action, and identity of CSR responding to the customer information. The record shall be maintained in accordance with the data retention policy period and shall be available to the Joint Board upon request.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement CS-013 , and this compliance is described below:</p>  <p style="text-align: center;">Figure 4-1 Customer Complaint Processing Stream</p> <p>Customer comments and concerns, whether in person, by mail, or electronically, will be dealt with promptly, within performance requirements, and noted in the customer account. Additionally, all complaints/disputes and subsequent interactions related to the complaint are logged onto a complaint tracker and worked through completion. The CSC Manager will review customer complaints and promptly investigate the complaint. Customer inquiries or complaints will be responded to in accordance with the Joint Board's business rules. The Joint Board will be promptly advised of any critical issues brought to the attention of the CSC. If a dispute cannot be resolved by telephone, the CSC Manager will respond in writing to any individual that requests such a response. Upon receipt of any documentation, the account is placed</p>		

	<p>on “hold” and forwarded to the Joint Board or dealt with as per previously agreed-upon instructions. Upon resolution, the customer is notified of their dispute’s acceptance, of a new balance (if applicable) or of the fact that their dispute was denied. Kapsch also has a customer web portal where they customers can upload dispute information and submit complaints or other comments.</p> <p>In order to resolve a dispute as quickly as possible, the IVR records 100% of all outbound and inbound phone calls. In addition, we store call data for two years, or per the Joint Board Business Rules, to ensure that we have there is adequate access to historical data in the event of a problem. The recordings are also used for training and, if necessary, disciplinary purposes. Our Quality Control Department regularly monitors all calls to ensure our agents are maintaining compliance with all state, federal and local laws as well as all client regulations.</p>		
CS-014	The Toll System Provider shall support the Joint Board and its consultants in communicating with, media representatives, community representatives and other stakeholders.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-014 , and this compliance is described below:</p> <p>Kapsch will leverage our experience with the CTRMA program, and will work closely with the Joint Board and its consultants to develop an innovative Customer Information Communication Program as required. Our staff will ensure that all inquiries and communications from the media, government agents, and others are handled in a professional, courteous manner within the guidelines directed by the Joint Board. This program will include supporting the Joint Board's customer communication, marketing campaigns, promotions, and announcements as well as communication regarding system improvements or issues. Kapsch understands that it is not empowered to speak for the Joint Board on any matter unless specifically authorized to do so.</p>		
CS-015	The System(s) shall record and report in the TCS the types of customer communications being received by the TCS including email, fax, SMS, phone call, letter, retail location or Walk-Up Center visits.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-015 , and this compliance is described below:</p> <p>The BOS solution will allow for customers to communicate via mail, fax, phone, web form, and an integrated IVR system. These systems will be supported by proven call center and operational SOPs. To maintain high quality service, the Kapsch Team will actively monitor and report on communication volumes, statistics and processing timeframes and proactively address any issues as they occur. The Kapsch Team will train and reinforce to staff the need to meet and/or exceed the performance standards set for the CSC.</p>		
CS-016	The Toll System Provider shall develop procedures, and training materials for responding to customer communications.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-016 , and this compliance is described below:</p> <p>Kapsch has established an extensive training program for CSC Staff covering every phase of the operation. Training includes a review of the Company Policy Manual, PC-based exercises, and education on call center techniques, role-playing, and a collection video and computer system orientation. Our training is geared toward empowering our customer service agents, call center staff and team members with the soft-skills they need to raise customer satisfaction levels, reduce conflict, improve teamwork and manage effectively. We feel that it is important to have the knowledgeable agents deal with the customers such that they can better understand and interpret customer complaints and questions and provide a consistent level of service.</p> <p>The Kapsch Team will work with the Joint Board to tailor the existing training to accommodate any new processes and the associated business rules when established.</p>		
CS-017	The Toll System Provider shall provide an option that the customer may select on the IVR to obtain answers to a set of FAQs and answers developed by the Toll System Provider. Toll System Provider shall also include any FAQs and answers that the Joint Board submits to Toll System Provider for inclusion in the IVR FAQs.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-017 , and this compliance is described below:</p> <p>The Kapsch Team provides a state-of-the-art IVR system. The IVR system is integrated with the BOS solution to provide customers with options to self-serve most account management functions, including a set of FAQs that the IVR will have answers to, in order to provide customers an additional channel to obtain program information</p>		
CS-018	The Toll System Provider shall regularly update the FAQs and responses for accuracy and timeliness. Toll System Provider shall describe its procedures for updating FAQs and responses in the CSC Operations Plan.	X	
	Note: Proposer shall describe in this Technical Response Form how it will develop a process and implement a procedure to ensure that the FAQs and responses are regularly updated.		



	<p><b>Proposer Response:</b>  Kapsch fully complies with requirement CS-018 , and this compliance is described below:  FAQs will be reviewed periodically, with LSIORB quarterly or as agreed, or if a significant change to the toll system/project occurs that would necessitate the need for an update (i.e. road opening, rate change, business rule change, etc.). In either instance, the Kapsch Team will work with the Joint Board to draft responses and ensure that they are updated in a timely manner.  Periodic updates will be made to the FAQs based on communication with customers and feedback received through customer satisfaction surveys, where customers may indicate that they are unclear of policies or rules associated with the toll project. This feedback is funneled from the operations team to the Joint Board for review and updates are formulated based on this information.</p>		
CS-019	<p>The Toll System Provider shall ensure that the Customer Service Center staff are trained by system Suppliers, and are provided with TSP provided manuals including online manuals to support the resolution of interactions. CSR staff shall also be provided with a decision tree and referral directory.</p>	X	
	<p><b>Proposer Response:</b>  Kapsch fully complies with requirement CS-019 , and this compliance is described below:  Kapsch shall provide an initial eight-day training program covering every phase of the operation is provided for CSC employees, including a review of the Company Policy Manual, PC-based exercises, education on call center techniques, role-playing, and computer system orientation. The training program shall include all CSR staff and all users of the TCS, including Joint Board Designated Representatives.  Training classes may include many forms of media including, but not limited to, lectures, video or DVD presentations, power point presentations, user guides, and online manuals. Classes will also include actual hands-on use of the system in a test/training environment.  Upon completion of this extensive training, new agents enter into a 4-week "academy bay" or nesting period where they are assigned to a team of CSC Leads who assist agents with account handling. Additionally, the training/quality assurance team monitors their interactions and evaluate their performance as they transition to the call center floor.  With continued on-the-job training, every employee is well informed of the highly sophisticated programs and procedures our company administers for its toll customers. Specific training shall be given that provides tools and methods for dealing with irate and emotional customers.  We believe that continuing education is the key to CSC employee performance. Annually, we logs approx. 35,000 hours of training, Many of these training hours include refresher courses taken by staff throughout the year to re-emphasize key company policies (i.e. PCI compliance, Security Management, etc.) and procedures.</p>		
CS-020	<p>The TCS shall have implemented appropriate security and controls to protect the data from unauthorized use and unauthorized users.</p>	X	
	<p><b>Proposer Response:</b>  Kapsch fully complies with requirement CS-020 , and this compliance is described below:  Kapsch shall maintain our PCI compliance for the duration of the contract with LSIORB. PCI compliance includes appropriate security controls to protect data from unauthorized use and users. The CSC Management Team understands the critical importance of safeguarding customer data and takes a very serious and holistic approach that incorporates both system and human resources to ensure the security of sensitive information. The system employs role-based authorization for access to information ensuring that staff has the information needed for their job functions but does not have access to other information or functions.  Protection of customer privacy is paramount to our team. Emphasis is placed on the security and safeguarding of customer information from day one. The employee training program contains a customer data security section as part of the Service Center Overview, to make certain that CSRs are fully knowledgeable and understand that:</p> <ul style="list-style-type: none"> <li>• No customer information is used or shared with anyone other than the person of record on the account and only after they are able to verify identity.</li> <li>• All staff is familiar with and acknowledges understanding of the Joint Board's Public Records Request Policy.</li> <li>• All account activity is logged appropriately within the BOS solution, to ensure that the integrity of the customer's account data is complete and fully documented.</li> <li>• Credit card information shall never be captured in any way other than directly into the BOS system.</li> <li>• No employee may access any confidential customer information that they do not need access to, nor confidential customer or other information, unless properly authorized.</li> <li>• When employees leave their workstations for any length of time, they are required to log-off the system.</li> <li>• Employees are expected to maintain the confidentiality of their passwords. Staff is expected to be responsible for the security of their password.</li> <li>• Staff that has access to the DMV online database will be limited to essential staff that is certified to access this information. This information is to be used only for business purposes and should be maintained confidential at all times.</li> </ul>		

CS-021	The Toll System Provider shall provide reports on customer communications status and the resolved reason code for resolution in the Monthly Operations and Maintenance Report.	X	
	Proposer Response: Kapsch fully complies with requirement CS-021 , and this compliance is described below: The BOS system allows for agents to open cases for customer resolution. Reporting on the cases, their statuses and resolutions will be provided on a monthly basis. Additionally the IVR and phone system also provides the ability to report on call qualifiers, which indicate the communication type (reason) and will allow for the Joint Board to have reporting on call/contact drivers, call center KPIs and performance against SLAs.		
CS-022	The average mean time for Toll System Provider to respond to all customer communications shall be as follows. <ul style="list-style-type: none"> <li>• Response to customer emails - 3 days during Startup Operations and 1 day during Steady State Operations.</li> <li>• Response to Voicemails - 3 days during Startup Operations and 2 days during Steady State Operations.</li> <li>• Response to Written Correspondence - 5 days during Startup Operations and 3 days during Steady State Operations.</li> </ul> The Toll System Provider shall report the average mean time for response to customer communications on a monthly basis in the Monthly Operations and Maintenance Report, and shall also report minimum and maximum customer communications times.	X	
	Proposer Response: Kapsch fully complies with requirement CS-022 , and this compliance is described below: The Kapsch Team understands and acknowledges the requirements for responding to customer communications and shall maintain procedures and reporting to ensure that the requirements are met and are monitored consistently to ensure compliance.		
CS-023	The Toll System Provider and the TCS shall provide capabilities to record in writing customer disputes concerning Customer Statements, processing and enforcement actions.	X	
	Proposer Response: Kapsch fully complies with requirement CS-023 , and this compliance is described below: Kapsch shall provide customers with the ability to submit disputes via various channels. Customers shall be able to submit disputes in writing via e-mail, fax, web, and written correspondence. The BOS shall provide a customer with the ability to upload dispute information and forms, and to submit complaints through the customer web portal. Upon receipt of any documentation, the disputed transactions are placed on “hold” preventing any system escalation and allowing time to process the customer's dispute. Upon disposition, the customer is notified of their claim's acceptance, of a new balance, or of the fact that their claim was denied.		
CS-024	The Toll System Provider (IVR and Web) customer communication channels shall provide information advising customers of the available service options including identification of the appropriate customer contact point for specific issues, payment of Customer Statements, and directions for converting a Customer Statement to a prepaid ETC Account or Registered Video Account.	X	
	Proposer Response: Kapsch fully complies with requirement CS-024 , and this compliance is described below: IVR, Web and written correspondence (notices, statements, account maintenance notices, etc.) will all contain messaging that includes service options (hours of operations, WUC and retail locations, web address, etc.) as well as contact information for various account maintenance/management activity. Additionally, messaging will be included specific to the activity being performed. As an example, when accessing payment options in IVR for account replenishment, messaging will include auto-replenishment options and options to pay via web. If a customer is contacting the CSC with regard to a video bill or violation notice payment, messaging for both the IVR and Web will include directions for converting to a pre-paid ETC account or registered video account.		
CS-025	The TCS shall post Traffic Transactions to existing accounts for customers who have Registered or Unregistered Video Accounts and the TCS shall create accounts based on Traffic Transactions for customers who do not have existing Registered or Unregistered Video Accounts.	X	
	Proposer Response: Kapsch fully complies with requirement CS-025 , and this compliance is described below:  The Posting stage classifies the transactions and submits them for processing. <ul style="list-style-type: none"> <li>• Transactions with a tag only read will classified as either an interoperable agency transaction or a Customer transaction.</li> <li>• Transactions with an Image only read are sent to “Image Review”, which will result in one of three states: an interoperable agency transaction, valid Customer transactions, or an unregistered video account.</li> <li>• Transactions with an image only that are not currently associated with any of those three states, the TCS will create accounts for customers who do not have registered or unregistered video accounts.</li> </ul>		

CS-026	The TCS shall provide the means for potential customers who do not yet have an account to access general information about the Project from the Customer Website, IVR or CSRs.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-026 , and this compliance is described below:  The Kapsch Team will provide a public website that provides general information related to the toll project. The Kapsch Team will work with the Joint Board to develop content for the site but generally speaking, previous web sites implemented for toll clients include information such as: service information, tolling basics, information on how to pay a bill, establishing accounts, commercial account information, roadway info, FAQs, contact information and media and event calendars. In addition, the IVR will be provided with an option for FAQs to access general information and all CSRs will be trained to provide this information and answer general information questions.</p>		
CS-027	The Customer Website shall provide access for customers who do not have a Transponder to pay tolls and Violations or sign up for a Registered Video Account.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-027 , and this compliance is described below:  The website/web portal provided by the Toll System provider shall allow users to register themselves in order to manage their accounts.</p> <p>After registration the customer shall be able to perform the following activities online:</p> <ul style="list-style-type: none"> <li>• Manage account preferences (i.e. manage vehicles, payment details, user settings, trip history and contact information);</li> <li>• Make a payment;</li> <li>• View User account history;</li> <li>• View and/or Request Statements/Video Bill Notices;</li> <li>• Post Complaints &amp; Suggestions;</li> <li>• Initiate a Dispute;</li> <li>• Create Transponder-based accounts (Account information, add vehicles, make payments).</li> </ul> <p>In addition, the website shall allow non-account holders to pay an invoice, pay a violation, or pay a toll by providing specific information (invoice number, violation notice number, License Plate), a form of payment, and specific contact information (including e-mail address).</p>		
CS-028	The Toll System Provider shall provide a user configurable fee structure to be used for customers to make arrangements to pay tolls and establish a payment plan.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-028 , and this compliance is described below:  The Toll Collection System shall include a BOS that will allow for payments to be made by customers via methods to include: mail (lockbox), telephone, IVR, and web using a credit card, ACH, EFT, money order or cashier's check.  The BOS shall provide the functionality to offer installment payment plans as an option to the Joint Board's customers. A configurable fee structure shall be used in affording customers payment options and in making arrangements to pay tolls and/or violations via a payment plan. Kapsch recommends that the Joint Board approve a minimum payment threshold to deter "penny-payment" customers.</p>		
CS-029	The TCS shall address customer account communications including adding vehicles, requesting a Transponder, account maintenance and payments.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-029 , and this compliance is described below:  Incoming mail and faxes will consist mainly of applications, payments, potentially returned transponders, as well as written customer and violation inquiries. Based on our experience with other CSC operations, we have noted that the amount of written/mailed correspondence has typically been declining while communication via the Web and e-mail has grown. The Kapsch Team will implement proven processes to ensure that each customer contact by mail is handled correctly, tracked to its resolution, and completed within the timeframe required by the Joint Board.  The Kapsch Team has developed specific procedures to handle incoming and outgoing mail to ensure that mail is handled responsibly. The mail will be opened, sorted by work type, and batched under dual-control (two staff members present at all times) and routed in accordance with SOPs. Controls will be in place to track work-batch types and custody of payments will be tracked through employee signatures at each transfer point in the process. These procedures will ensure the security of the Joint Board's funds received by the CSC.</p>		

CS-030	The CSC staff shall identify potential system and service issues from their interactions with customers. Customer Service Center staff shall communicate with and provide feedback to the Toll Operations Center or Joint Board in a timely manner.	X	
	Proposer Response: Kapsch fully complies with requirement CS-030 , and this compliance is described below: The BOS system allows for cases to be open and routed to management team for potential system and service issues. These are monitored, tracked and reported on daily. Management staff will communicate this feedback to the TOC and/or the Joint Board in a timely manner in order to ensure resolution of important issues and to identify any trends in customer communications or issues. Where applicable, the CSC management staff will make recommendations as to address the situation including updating information available through the customer interface channels including the web site and IVR as well as additional training for the CSR staff.		
CS-031	The Toll System Provider through the CSC shall monitor the Customer Website, provide notices and daily informational updates to the Customer Website as needed, and coordinate those updates for approval by Joint Board. The CSC shall ensure that Customer Website operations meet Performance Requirements by performing routine checks on the Customer Website account management system, and the Customer Website informational page.	X	
	Proposer Response: Kapsch fully complies with requirement CS-031 , and this compliance is described below: The Kapsch Team currently has a process in place by which customer's website and content are updated. Updates are reviewed and approved by the Joint Board prior to implementation and updates that require changes to web services are initiated using a gated project approach to mitigate risk and ensure that multiple tasks/priorities are being addressed and the appropriate resources are being allocated. Additionally the Kapsch Team ensures that website updates and operations meet performance requirements by performing routine checks on the site account management system.		
CS-032	The Toll System Provider shall ensure that the toll customers' inbound and outbound mail is handled accurately, expeditiously and confidentially while at the same time operating in a cost-efficient manner. The CSC shall log any and all mail room activity which is not automatically tracked by the TCS. The CSC shall time and date stamp and log all incoming mail and shipments. The mailroom shall be kept clean and orderly with a minimum of materials out of storage at all times. Valuable items, particularly inventoried items such as Transponders, shall be stored under lock and key when not in use. Mail room services shall be appropriately staffed to ensure that all mail transactions are completed daily with no backlog before close of the mail room, and in compliance with Performance Requirements.	X	
	Proposer Response: Kapsch fully complies with requirement CS-032 , and this compliance is described below:  Incoming mail and faxes will consist mainly of applications, payments, potentially returned transponders, as well as written customer and violation inquiries. Based on our experience with other CSC operations, we have noted that the amount of written/mailed correspondence has typically been declining while communication via the Web and e-mail has grown. The Kapsch Team will implement proven processes to ensure that each customer contact by mail is handled correctly, tracked to its resolution, and completed within the timeframe required by the Joint Board. The Kapsch Team has developed specific procedures to handle incoming and outgoing mail, including faxes, to ensure that mail is handled responsibly. The mail will be opened, sorted by work type, and batched under dual-control (two staff members present at all times) and routed in accordance with SOPs. Controls will be in place to track work-batch types and custody of payments will be tracked through employee signatures at each transfer point in the process. These procedures will ensure the security of the Joint Board's funds received by the CSC.		
CS-033	The Toll System Provider and CSC operations shall be responsible for printed material and the preparation and mailing of all outbound mail or shipments including but not limited to: notices of expiring credit cards, notices of account balances dropping below a configurable balance, billing and Violation notices up to and including collection notices, Transponder kits to customers, Transponder retail packages to retail outlets, and Transponders being returned to the manufacturer for any reason. The Toll System Provider shall provide quality control and approval of all outgoing Correspondence before release from the mail house or internally at the CSC. TSP shall assemble typical mail distribution packages that may include a Transponder package kit with marketing branding logos, a mounting instructions sheet and a terms and condition statement. TSP shall use such marketing items, branding or logos as the Joint Board may direct during the Term. TSP shall obtain Joint Board prior approval of Transponder kits, instructions, and packaging.	X	
	Proposer Response: Kapsch fully complies with requirement CS-033 , and this compliance is described below: The Kapsch Team has existing policies and procedures in place to support the printing, preparation and mailing of all printed materials, outbound mail (including account statements, account notices, invoices, violations and transponders/kits) that is required for this project. Our CSC currently supports the mailing of over 1.2M pieces of mail a month across our different customers, similar in scope to the mailings listed for this requirement.		

	<p>Correspondence is prepared each day through a batch process that generates notices/correspondence to be sent and custom scripts (attached to PRTG, our system monitoring tool) are used to monitor overnight and daily batch jobs to ensure that they complete in the time expected and have the results expected. Batch jobs include Print House, Court interfaces, Invoice and Notice Preparation. Events are created should this processing fall outside of expectations. These events are forwarded to MOMS for remediation.</p> <p>Once notices are generated, QA agents perform a review of all outgoing correspondence to ensure that all elements of the notices/correspondence being sent contain accurate information and are displayed and/or calculated accurately for the customer. Elements reviewed include but are not limited to:</p> <ul style="list-style-type: none"> <li>• Correspondence Type - Ensure that the invoice/notice generated is generated as the correct notice type (Video Billing Notice, Account Statement, Low Balance Notice, Credit Card Expiring Notice, Violation Notice, etc.)</li> <li>• Due Date Calculation - Due date (when present) is calculated correctly.</li> <li>• Verify Amounts/Balances - Verify that the Total Amount on the Summary of Charges or Balance fields match the total of fees and transactions and/or balances in the BOS system.</li> <li>• Due Dates/Amount Due elements listed throughout the notice match.</li> <li>• Review the transactions, fees listed on the invoice and compare them to the transactions/fees listed in the BOS system to ensure that all appropriate transactions and fees have been included in the notice.</li> <li>• For Transponders - The number of kits in each batch will be verified to ensure that the count for the batch is accurate. Each mailing within the batch will be reviewed to ensure that it was fulfilled accurately, ensuring that the number of kits requested is equal to the number of kits being mailed. Lastly, a comparison/review will be made to ensure that the kit numbers listed on the accompanying letter matches the actual kits being mailed.</li> </ul> <p>Quality review for all outgoing correspondence is, then all outgoing correspondence is sent to our mail-house services provider, to ensure the Authority's high-volume mail is handled with the timeliness and professional care required for sensitive customer communications. The Kapsch Team proposes to have the mail house handle customer invoices, violation notices, customer statements, and similar high-volume standardized mailings.</p> <p>For the shipment of transponder kits (either to customers directly via postal service or to retail outlets via courier) resources and processes shall be identified for the assembly of the transponder kits. These kits will include transponders, mounting instructions, user agreements and branding approved by the Joint Board. An inventory of kits will be assembled to support the daily run rate of transponder requests, and mailroom staff will draw from this inventory in order to fulfill transponder requests in an accurate and timely manner.</p>		
CS-034	<p>The Toll System Provider shall provide for all users of the toll road the ability to pay tolls automatically with their toll account from interoperable and reciprocal tolling members of the IAG. TSP shall provide CSC services to interoperable agency customers. TSP shall perform regular transaction and financial reconciliation with each interoperable toll agency, and monitor all required file exchanges, dispute processing and resolution and the sending of final reciprocity amounts through the established Joint Board channels for fund exchanges. TSP shall perform all processing including final settlement. The CSC shall service Project toll customers in their use of other toll authorities' facilities to the greatest extent possible as well as fully support "away" customers using the Bridges.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-034 , and this compliance is described below:</p> <p>Transactions that have been qualified by Transaction Processing or Interoperability (IOP) Processing are applied to a Customer Account by the Post Transaction to Account process.</p> <p>The Kapsch Team will comply with all reciprocity requirements and ensure that the BOS system addresses all of the functional requirements related to interoperability and reciprocity with other state toll agencies including:</p> <ul style="list-style-type: none"> <li>• Creating, receiving and processing toll tag status files from all agencies.</li> <li>• Creating, receiving and processing revenue settlement reports for reciprocal transactions between the Joint Board and the other agencies.</li> <li>• Providing functionality to perform settlement among agencies.</li> <li>• Providing a point of contact responsible for tracking and reconciling transactions and revenues due to and owed by the Joint Board.</li> <li>• Providing customer service services to interoperable agency customers including responding to inquiries.</li> </ul>		
CS-035	<p>The Toll System Provider shall provide a lockbox operation that includes extensive oversight of the process, controlled access, CCTV monitoring, processes and procedures for disposal of incoming mail materials, archiving if available, control of paper usage in the lockbox area and attention to detail. The Toll System Provider shall provide a staff to support lockbox operations and provide mail opening processes, scanning of mail procedures, receipt of funds through the mail, acceptance of any Correspondence addressed to the lockbox P.O. Box, and any Correspondence for the Project.</p>	X	

	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-035 , and this compliance is described below:</p> <p>The Kapsch Team understands that it is responsible for the physical security of facilities and property and will provide the CSC facility with a security access system as well as provide for additionally secured areas for protection of valuable assets, including server rooms, funds storage, and transponder storage. Working closely with the Joint Board, SOPs will be developed that clearly outline security procedures for the facility. These SOPs will define the reporting and recording of any lapse in security. Only authorized Joint Board and the Kapsch Team operations and maintenance staff, with badges configured in the system, will be allowed to access the CSC facility and only to areas authorized to them based on their project position or role. The access control system will enable authorized personnel to adjust access privileges as required for efficient operations and security requirements. The computer/server room(s) will include environmental controls to meet system requirements.</p> <p>The CSC will be equipped with secure storage and mechanisms necessary to ensure funds are adequately secure and protected. Routine and random audits of these funds shall be conducted as stipulated in the approved SOPs.</p> <p>As part of its Back Office Operations, The Kapsch Team operates a segregated secure internal lockbox where all payment processing is handled. The staff that performs these functions does not cross into other operational areas to ensure segregation of duties, as an audit standard. The internal lockbox processes payments received via check, money order, cash, credit/debit cards or ACH.</p> <p>Payments are applied to customer accounts immediately, with the ability to apply fees for returned checks (this is a configurable fee amount) or handle other payment exceptions.</p> <p>All payments are handled under dual control and the lockbox contains other security measures such as</p>		
CS-036	<p>The Toll System Provider shall ensure that all money is handled and accounted for in a timely manner. Toll System Provider shall provide the Joint Board with all necessary tools to enable it to track all System activities involving the handling of money and verify reconciliation processes easily and quickly. Employees of the Toll System Provider who handle cash must pass a level of security clearance established by the Toll System Provider and approved by the Joint Board. All TSP Personnel with access to money or account information shall undergo and pass security screenings consistent with Good Industry Practices prior to assignment to the Project. These screenings shall be documented and available for Joint Board review.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-036 , and this compliance is described below:</p> <p>The Kapsch Team's payments processing/cash handling policies ensure that all funds/assets are handled appropriately and accounted for in a timely manner. The Joint board will have full visibility into the BOS and accounting systems. The Kapsch Team's accounting system also offers automatic toll reconciliation and financial reconciliation such as (credit card payments, bank reconciliation etc.).</p> <p>Additionally, all employees that handle cash pass a level of security clearance that includes a background check (which includes a police clearance for their jurisdiction of residence), a drug screening test, a credit check to ensure no undue financial burden is apparent, no security fraud is revealed and no financial judgments are pending or in place and their past work record is verified as acceptable.</p> <p>The Kapsch Team will work with the Joint Board to amend the existing policy as needed in order to gain approval. All screening results will be made available to the Joint Board for review.</p>		
CS-037	<p>The Toll System Provider shall provide oversight of Transaction processing such that the CSC has valid, accurate and reliable information from the TCS to successfully service the customer accounts.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-037 , and this compliance is described below:</p> <p>The Kapsch Team currently has system alerts and daily transactions processing reports that provide oversight of transaction processing and reconciliation of transactions received into the BOS system.</p> <p>Additionally, outputs (i.e. files to DMV, interoperability files, notice generation files, etc.) are monitored each day to ensure that processing of these workflows are yielding the expected outputs.</p>		
CS-038	<p>The Toll System Provider shall provide an image review staff and supervisors to manually enter license plates which are not or cannot be read through OCR Software and maintain Performance Requirements for image review staff and backlogs. This team shall be responsible for review of all images that do not pass the OCR with a confidence level of percentage threshold that is configurable in the System.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-038 , and this compliance is described below:</p> <p>The image review team will review and certify all violation images once the images have been processed by the violation enforcement system's optical character</p>		

recognition (OCR) processing and have not passed the established confidence level (%) threshold. The BOS system and OCR process will provide each violation image and generate license plate information and related data for verification during the image review process. This process allows for manual entry of the license plate and state. Different tasks (initial review and supervisor review) ensure that disagreements between operators and OCR engines are cleared effectively. Statistics captured help supervisors and managers adjust the workflow and assignments.



Figure 4-2 BOS Image Reviewer Screen

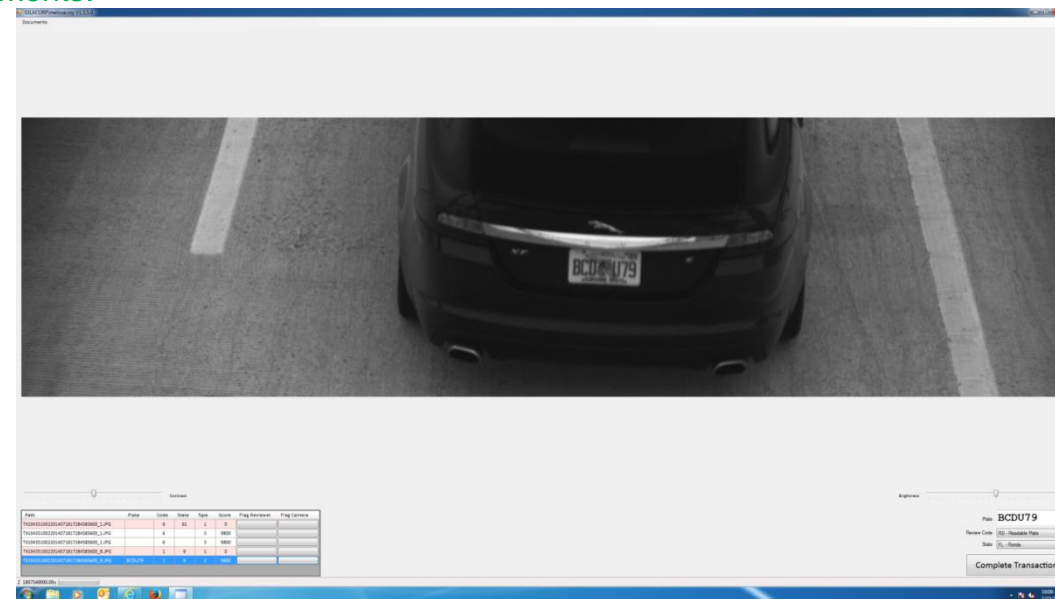


Figure 4-3 BOS Image Supervisor Screen

CS-039	The TCS shall process Traffic Transactions and Financial Transactions in the same way for both Project Customers and interoperable customers (except for additional steps as identified within the E-ZPass Agreement) so that both customer groups have the same customer experience.	X	
	<p>Note: This requirement is to ensure that all Transactions are processed in a timely manner and treated in a consistent manner regardless of Transaction type.</p> <p>Proposer Response:  <b>Kapsch fully complies with requirement CS-039 , and this compliance is described below:</b>  The BOS transaction processing system is responsible for the application of business logic to transactional information to determine proper assignment to Customer Accounts, Interoperability (IOP) Accounts, or Video Billing Accounts. The system retrieves transactions from the associated in-lane transaction processor data store. All transaction processing is monitored against KPIs and variances are reported to ensure that the processes are running smoothly.</p>		
CS-040	It is desired that the Toll System Provider provide a second image review by a different clerk or supervisor to verify the initial image review clerk's results when a license plate was read and assigned a high confidence level, but the information appears to be incorrect, or the license plate has not been seen before or cannot be recognized or read.		X
	<p>Proposer Response:  <b>Kapsch implements Value-Add CS-040, and this compliance is described below:</b>  Kapsch shall provide a second image review process to verify the initial image review result for image review results which involve human data entry. These image reviews shall be queued for double-blind validation where reviewer1/reviewer2 results must agree without either human seeing the other's result) to ensure high accuracy. This includes license plates that have not been "seen" by the system before, images that fall below OCR confidence levels, plates that have achieved high confidence levels but may be incorrect, or other configurable parameters to ensure that high levels of quality image review are met.  In the event that the reviewer1/reviewer2 results do not agree, then the image is reviewed by a supervisor to determine the plate's final disposition.</p>		
CS-041	The Toll System Provider shall accurately identify new and un-matched license plates to the correct owner of record using search tools and mechanisms consistent with Good Industry Practices.	X	
	<p>Proposer Response:  <b>Kapsch fully complies with requirement CS-041 , and this compliance is described below:</b>  For Traffic Transactions with no E-ZPass transponder/tag data, the BOS system shall use the license plate as the key to determine if the trip is a current customer</p>		

	with a pre-paid E-ZPass account, a registered/pre-paid video account or a previous unregistered video account. If so, the Traffic Transaction shall be posted to the account and processed according to the appropriate Business Rules. If no account is found, an unregistered video account shall be created, the Traffic Transaction shall be posted, and the license plate information shall be processed through DMV records to determine the correct owner of record so the tolls can be collected.		
CS-042	The Toll System Provider shall provide that license plate image interpretation results are accurately entered into Transaction records, through implementation of the image review Business Rules approved by the Joint Board, and shall provide spot checks and internal quality control checks of automated image processing system.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-042 , and this compliance is described below:</p> <p>The BOS solution will ensure that license plate image results are accurately entered into transaction records, through implementation of agreed upon image review business rules approved by the Joint Board, and shall provide spot checks and internal quality control checks of automated image processing system. Spot check functionality in our current system allows for auditing of automated image processing system results and determining the accuracy rate of the ALPR.</p> <p>The QC framework is grounded in a foundation of operational inputs, which flow into various monitoring and audit processes. These operational inputs and processes ultimately affect the results demanded. Basic operational processes and inputs that include, but are not limited to misreads, reject rates, etc. Monitoring of areas such as these and determining deviations from the norm can be used as key indicators that would prompt an unscheduled quality control or spot check.</p> <p>These operational processes and inputs are fundamental to supporting the audit/qc processes and are part of operational control activities, information and communication, and risk assessment and response. For example, if in monitoring inputs, an observation is made that the reject rate of transactions has increased beyond the standard deviation, and upon review there are no factors present that would account for the deviation, then this would prompt staff to plan a false reject audit or spot check in order to determine root cause of the increase.</p>		
CS-043	The Toll System Provider shall ensure that image review clerks perform quality control procedures on images entered, and update data for those images not recognized automatically.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-043 , and this compliance is described below:</p> <p>Kapsch shall provide an image review application that includes the facility for image review clerks/auditors to review the images-of-record and corresponding image review results for a set of Traffic Transactions previously processed by the image processing system (TIPS). The application shall permit the selection of a set of Traffic Transactions for audit based on their date/time of creation at the roadside.</p>		
CS-044	The Toll System Provider shall provide that Transponders owned by or in the care of the Joint Board are handled and accounted for in a secure manner. Toll System Provider shall ensure that only authorized users are allowed access to the System or facilities to handle the Transponders. Reports of Transponder inventory shall be generated and reviewed by Toll System Provider not less than monthly. The Toll System Provider shall be responsible for all Transponders under its or its agents or subcontractors' control. This shall include financial responsibility for damaged or stolen Transponders in the Toll System Provider's inventory.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-044 , and this compliance is described below:</p> <p>The Kapsch Team will maintain inventory from receipt of stock to assignment and shipping (distribution). Transponder inventory will be secured at the CSC and Walk Up Center facilities and an inventory control methodology will be employed to ensure that transponder inventory is both secured and periodically audited and reconciled.</p> <p>The Kapsch Team will employ preventative and detective controls to ensure the safeguarding of tags. These will include but not be limited to:</p> <ul style="list-style-type: none"> <li>• Physical Access - Physical access to the transponder storage facility is controlled both externally and internally. Additionally, the Kapsch Team has a stringent access policy that requires all employees to have their badges displayed at all times and not allow personnel access to the building without it.</li> <li>• Photo Access Badges - Each employee is required to wear an access badge which contains a personal photo. This badge is encoded for access to and from certain areas of the building. Only a limited number of employees will have access to the Tag Fulfillment area. They are: Tag Fulfillment staff; Supervisor - Tag Fulfillment; Manager, Operations; Director - Toll Operations; Vice President of Operations;</li> <li>• Cameras - Tag Storage and Fulfillment area will be monitored by surveillance cameras. Camera recordings are stored for 15 days for review.</li> <li>• Requests for Access - All requests for new personnel needing access to the Tag Fulfillment and Storage area require an IT Help Desk ticket requesting access. This must be approved by the Director of Toll Operations with no exceptions.</li> <li>• Termination of Access - Likewise, in the event an employee with access to the Tag Fulfillment transfers to an area of the company where access is no longer required the Manager, Operations must place an IT Helpdesk ticket requesting revocation of that individual's FOB privileges immediately. Terminated employees are handled through Human Resources.</li> <li>• Periodic Inventory Counts/Audits - Audit of all tag related inventory will be conducted on a monthly basis, reconciling it to the inventory listed in the system. In</li> </ul>		



	<p>the event of a discrepancy, the Manager, Operations will alert the Director of Toll Operations who will in turn report the nature of the discrepancy to Joint Board staff.</p> <ul style="list-style-type: none"> <li>Daily Reporting of Tag Inventory - The Tag Fulfillment Supervisor will maintain a count of all tag inventories in each status in the VCSS system. This information is updated on a daily basis with counts to ensure that inventory is reviewed on a consistent basis as a safeguarding control and to ensure timely re-orders as needed.</li> </ul> <p>Matching receiving documents, purchase orders and vendor's invoices - Control process is implemented at the time inventory is received, where by the inventory received is matched to the receiving documents, purchase orders and vendor invoice to ensure that all inventory is present at the time the order is received.</p>		
CS-045	The CSC shall accurately track and report the location and distribution of all Transponders. Controls such as bar coding, warranty and location of each Transponder shall be tracked upon initial receipt into inventory, whether in the CSC inventory storage, with a CSR in the CSC or Walk-Up Center, in the mail room or remote facility locations, at a retail outlet prior to sale and registration, assigned to a customer account, reported lost, damaged or stolen, returned to the CSC to be sent back to the manufacturer, or returned for disposal.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-045 , and this compliance is described below:  Tag inventory will be maintained and stored at the CSC facility with the Operations team supporting multiple distribution channels and locations. The Kapsch Team will take custody of current inventory for tag shipments. The Kapsch Team will notify the Joint Board when new shipments are received. The transponder vendor will send a data file with serial numbers to cover the entire shipment. This file will be used to reconcile tags shipped, and the CSC will work with the vendor to resolve discrepancies.  The transponder inventory data will be entered into, and be available in the BOS which tracks each tag's current disposition (in inventory, assigned to an account, returned for warranty repair/replacement, assigned to a CSR for distribution, conveyed to a retailer, etc.)  For other related tag kit inventory, such as marketing material, mounting hardware and paper materials, the CSC will maintain an adequate supply of inventory and periodically report on available inventory, including any new inventory purchased and received.  Once tag inventory at remote locations has reached a supply equal to one week's supply, the Tag Fulfillment Supervisor will create additional tag inventory bins to be sent to the CSC. Tags will be inventoried at the time of delivery by the location Supervisor verifying count and accepting custody of the inventory. Tag fulfillment supervisor will report tags sent to remote locations and update inventory levels appropriately to monitor usage and determine next re-order.</p>		
CS-046	The CSC shall take a weekly physical count of Transponder inventory, and shall be responsible for inventory reconciliation every week, and when inventory is received, or transferred to and from locations. Inventory reports shall include minimum order levels. The Toll System Provider shall notify the Joint Board when new Transponders need to be ordered. The Joint Board shall purchase the Transponders in the types and quantities recommended by the TSP and transfer them upon receipt to the CSC for inventory management. The Toll System Provider shall verify the receipt of Transponders and shall acknowledge such receipt to the Joint Board. Toll System Provider's notice to the Joint Board requesting Transponder orders must incorporate purchasing lead times to ensure there is never a shortage of Transponders on hand.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-046 , and this compliance is described below:  The Tag Fulfillment Supervisor will perform tag inventory reconciliation once a week to verify tag inventory levels. The Tag Fulfillment Supervisor will oversee a physical count of all tags in inventory including tags that are stored at the CSC facility, Tag Room and remote locations. This count will be compared to the totals from the BOS system generated report (Transponder Distribution Report). The Tag Fulfillment Supervisor will also be responsible for notifying the Joint Board of the number and types of transponders that need to be ordered to replenish supplies and will confirm when the supplies have been received.</p>		
CS-047	The Toll System Provider shall keep Transponder kits in inventory and include them with Transponders distributed over-the-counter, via mail, or through retail outlets. The kits shall include read prevention bags, Bridge maps, mounting instructions, terms and conditions, marketing and branding logo mailer. The CSC shall be responsible for maintaining an adequate inventory of Transponder kits.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-047 , and this compliance is described below:  For other related tag kit inventory, such as marketing material, mounting hardware and paper materials, the CSC will maintain an adequate supply of inventory and periodically report on available inventory, including any new inventory purchased and received.</p>		
CS-048	The Toll System Provider shall provide adequate secured space for Transponder inventory storage, adequate secured space for fulfillment operations and adequate secured space for designated secured locations for mail drop.	X	

	<p>Proposer Response:  Kapsch fully complies with requirement CS-048 , and this compliance is described below:  The CSC will maintain inventory from receipt of stock to assignment and shipping (distribution). Transponder inventory will be secured at the CSC facility(s) and an inventory control methodology will be employed to ensure that transponder inventory is both secured and periodically audited and reconciled.</p>		
CS-049	<p>The Toll System Provider shall support and process Transponders purchased by customers at other E-ZPass interoperable toll agency customer service centers. The TCS shall provide functionality to support monthly fees for different types of Transponder accounts (e.g. E-ZPass accounts may have a service fee whereas the local 6C Transponder based accounts may have no fee or a different fee).</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement CS-049 , and this compliance is described below:  The BOS/TCS will support and process transponders purchased by customers at other E-ZPass interoperable toll agency CSCs as required. The BOS system will include functionality to support monthly fees for different types of transponder accounts. These fees will be configurable based on transponder accounts and transponder types.</p>		
CS-050	<p>The Toll System Provider shall provide staff to oversee, review, and process Violations that are generated from the TCS. This staff shall generate the paper version of the notices, review the notifications electronically and on paper, check the Violation for accuracy, ensure the Customer Statement is appropriate and legible and send the Customer Statement to the mail room for distribution. The Toll System Provider shall provide management that is responsible for answering escalated calls from customers not addressed by the CSR staff.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement CS-050 , and this compliance is described below:  The CSC staff will be assigned to review violation notices generated from the toll processing system. Staff assigned to this function will review notices and perform spot check review of notice elements to ensure that violation notices are being generated accurately and that transaction, amounts, billing information and notice related dates correspond to the totals in the BOS system.  Additionally they will review the notices for completeness, legibility and overall quality prior to forwarding to the mailroom for distribution.</p>		
CS-051	<p>The Toll System Provider shall process all Customer Statements generated by the TCS based on approved Business Rules. Invoices shall indicate fees and fines applicable to each individual Traffic Transaction included in the Customer Statement, and the total amount of fees and fines for the aggregate of all Traffic Transactions listed in the Customer Statement based on approved Business Rules. Invoices generated automatically by the TCS shall be reviewed for quality control and accuracy before processing the invoices and sending them to the customer.</p>	X	
	<p>Note: The Joint Board currently anticipates using a three-step Customer Statement process. The first Customer Statement will be for the amount of the toll owed. If that is not paid within thirty (30) days, a new Customer Statement will be sent which will act as a late notice. The charge on that Customer Statement will be for the amount of the toll and a late fee. If no payment is received within thirty (30) days, a final Customer Statement will be sent which will act as a Violation notice. The charge on that Customer Statement will be for the amount of the toll, the amount of the fee previously charged, and the amount of the Violation fine. If no payment is received within thirty (30) days after this Customer Statement is sent, the Violator's account will be moved to the Collection Agency process, whether internal or external to the TSP, and, if the Violator is a citizen of a state with which the Joint Board has a reciprocal video toll enforcement agreement, communications with the DMV in the Violator's state will begin and a hold will be put on the Violator's vehicle registrations. This description is preliminary, is for information purposes only, and is subject to change at the sole discretion of the Joint Board.</p> <p>Proposer Response:  Kapsch fully complies with requirement CS-051 , and this compliance is described below:  The Kapsch Team will work with the Joint Board to design statement generation process to include the 3-step process outlined above. Current notices being generated on similar projects follow a similar process whereby a customer receives an initial notice/statement for the amount of the tolls owed. If left unpaid after 30 days that notice escalates to a late notice, which includes the unpaid tolls and a late fee. If this notice remains unpaid then it escalates to a violation notice, which includes the unpaid balance of the late notice and the amount of the Violation fee.  If unpaid notices then are moved to collection status and forwarded to a collection group for collection services. Each notice along the escalation process is reviewed for quality control and accuracy prior to being sent to the customer.</p>		
CS-052	<p>The TCS shall support administrative hearings in accordance with Kentucky Revised Statue Chapter 13B. The TCS shall suspend collections and all determined escalation times during the administrative hearing process. The TCS shall notify the Joint Board by email within 24 hours when an administrative hearing process is</p>	X	

	requested and all records associated with an administrative hearing shall be linked to the customer account. The Toll System Provider shall provide reports on the current number of administrative hearings by account and current status (e.g. open, pending, closed and associated resolution).		
	<p>Note: An administrative hearing can only be initiated by a customer making a request. After the TSP notifies the Joint Board that a customer has made a request for an administrative hearing, the Joint Board will appoint a hearing officer. The hearing officer will send out the appropriate notices and provide the hearing schedule. The TSP will be asked to provide evidentiary support during the hearing. The hearing officer's authority is limited to determining whether the toll charged is owed. Some examples of reasons the hearing officer may determine a toll is not owed include misidentification of license plate, errors in registration look up, and incorrect vehicle classification. If the hearing officer determines that the toll was correctly charged, the Toll System Provider will resume normal collection activities at the point at which they were suspended due to the administrative hearing process, unless the customer appeals the hearing officer's determination to the Kentucky courts. If a customer appeals the hearing officer's decision, the Toll System Provider shall continue to suspend collection activities against that customer until the court issues its ruling. If an appeal is made, the TSP will be asked to provide evidentiary support and possibly to provide a representative to act as a witness.</p> <p>Proposer Response:  Kapsch fully complies with requirement CS-052 , and this compliance is described below:  The Kapsch Team will support administrative hearings as outlined in this requirement.  The Kapsch Team currently employs a similar process for its Texas RMA clients. Collection activity is suspended and the RMA is notified when the customer requests a hearing. Our pre-court staff is tasked with compiling all records associated with the account in preparation for the hearing process.  The Kapsch Team currently provides reports that summarize the number of accounts that are currently in the hearing process, listing each account and the status associated with the hearing (open, pending, closed, along with final disposition).</p>		
CS-053	The Toll System Provider shall provide collection services to collect Collection Status Violations in accordance with the approved collections process set forth in the Business Rules during the Collection Status Violation Period. The collection services may be provided by the Toll System Provider directly or subcontracted through the Toll System Provider to a third party service.	X	
	<p><b>Note:</b> The total compensation to be paid to TSP for collection services as specified in the Toll Services Agreement shall be included within the Total Toll Collection System Operations and Maintenance Price (Years 1 through 7) as specified in the Proposer's Price Proposal, plus the Collection Status Violation Fee, regardless of whether collection services are provided directly by the TSP or through a subcontracted third party service.</p> <p>Proposer Response:  Kapsch fully complies with requirement CS-053 , and this compliance is described below:  The Kapsch Team will deliver a solution for comprehensive collection services in-house. Our approach to collections includes leveraging a blend of experienced people, proven processes, and industry leading technology to deliver a high performing collections program. We believe that by hosting the collections processes in-house we have greater flexibility in reaching agreements with the customers and turning a habitual violator into a satisfied patron. Right up until we enter the final phase of collections, the judicial system, we have the ability to make settlement with the customer, a benefit we would not have if these processes were handled externally. Toll Agencies and by extension their collection processes are subject to external political influence thus we believe maintaining control of the customer resolutions and relationship will be a great benefit to the LSIORB program.  Specifically, collections systems and processes that balance the seemingly conflicting objectives of persistent collection efforts with exceptional customer service. Our collection methodology consists of:</p> <ul style="list-style-type: none"> <li>• Skip Tracing. Once an account has been referred for collections, we perform a national skip tracing process. We use numerous national skip tracing vendors. These vendors provide information that gives us the best chance to contact and secure payments on a client's account, by obtaining the most current information available. Updated address information is obtained prior to generating and sending the initial collection notice.</li> <li>• Dunning Notices. Immediately after account information is verified or updated via skip tracing, a collection notice is sent. The collection notice contains information about the delinquent debt including details and an itemization of the outstanding liabilities. All of our collection notices provide the debtor with a toll-free phone number and an internet address for obtaining account information and making payment 24-hours per day, 7-days per week. A remittance slip bearing the assigned reference number and a return remittance envelope are also provided with each notice.</li> <li>• Telephone Campaigns. Our automated dialer gives us the ability to run multiple campaigns simultaneously or consecutively throughout the day. We run both attended campaigns (with a live agent) and unattended campaigns (no live agent), which allows us to work many more accounts during the day. The campaigns will be developed, working with the Joint Board to agree upon specifications, analyzing the accounts being collected and creating a strategy that will yield the best results.</li> </ul>		

	<ul style="list-style-type: none"> <li>Toll Free Customer Service Line. Kapsch will provide customers 24/7 access to a toll-free automated Interactive Voice Response (IVR) phone system for payment and customer support services and information. Additionally, we will offer person-to-person customer service support from 7:00am to 7:00pm, Monday through Friday.</li> <li>Multiple Payment Options. SOPs will allow for payments to be made by debtors via methods to include, but not limited to, mail (lockbox), telephone, IVR, and web using a credit card, ACH, EFT, money order or cashier's check. We will also be able to accept payments via Western Union Quick Collect or at Ace Cash Express locations. We also will offer installment payment plans as an option to the Joint Board's customers. Payment plans are closely managed and have become a growing part of collection.</li> </ul>		
CS-054	The TCS shall provide a threshold dollar amount for escalation of accounts sent to collection. If the threshold is less than the configured amounts, the accounts shall not be sent to the Collection Agency for future pursuit but shall remain as a receivable in the TCS with the outstanding debts including tolls and fees due to the Joint Board.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-054 , and this compliance is described below:  The BOS/TCS will provide a threshold dollar amount for escalation of accounts sent to collection. If the threshold is less than the configured amounts, the accounts shall not be forward to collection group for processing. This is a configurable setting in our escalation workflow and can be added to ensure that only customers that have outstanding debt that exceed the minimum threshold will escalate to collections.</p>		
CS-055	The Toll System Provider shall provide Walk-Up Centers to provide face-to-face account establishment and maintenance service for customers; to distribute Transponders directly to the public; and to support revenue collection and oversight by the Joint Board. The Walk-Up Centers shall accept cash along with credit cards, checks, debit cards, and money orders. TSP shall provide management of a cash bank, armored car pickups, and secured access control at the Walk-Up Centers.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-055 , and this compliance is described below:  Kapsch will provide full customer service functions at the Walk-Up Centers through agents that have access to the Back Office systems. Services will include toll account, pay-by-mail and violation support services, including, but not limited to:</p> <ul style="list-style-type: none"> <li>Account Management Functions</li> <li>Account Enrollment</li> <li>Receiving general information regarding toll facilities and toll services</li> <li>Obtaining, returning or exchanging a transponder</li> <li>Account Payments (cash, check, money order, credit and debit cards)</li> <li>Account Conversions (Account Change)</li> <li>Closing an account</li> <li>Dispute a violation</li> <li>Deposit Process</li> <li>Cash Bank/Change Fund Management</li> </ul> <p>Kapsch will ensure that the Walk-Up facilities are adequately staffed to perform these services and that all access to system and work areas is maintained.</p>		
CS-056	The Toll System Provider shall lease space in its own name for the Walk-Up Centers. Two locations shall be required. One location shall be in Louisville, KY and the other location shall be in Jeffersonville, IN. At least 3 potential locations for each Walk-Up Center shall be submitted by TSP to the Joint Board for review and approval. At a minimum, Walk-Up Centers shall be equipped with a waiting room with chairs and writing surfaces, counter surfaces or counter space for customers, customer service representative counters, a small mail room and space for backup fulfillment activities, a small printing and production area, an area for copier, printers, and fax machines, a small secured inventory and storage space for Transponder management, an IT closet, a small break room with sink, drinking water, lockers and microwave, a supervisor's office, separate accessible waiting room and hearing room, and one small office for a Joint Board employee on assignment or inspection. Walk-Up Centers shall meet American with Disabilities Act requirements for employees and customers and comply with all applicable Laws, building codes and standards.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-056 , and this compliance is described below:  The Kapsch Team understands this requirement and will lease space in its own name for the two (2) Walk-Up Centers required, with one location being in Louisville, KY and the other in Jeffersonville, IN. At least 3 potential locations for each Walk-Up Center will be submitted to the Joint Board for consideration and approval.</p>		

	The Kapsch Team will ensure that the Walk-Up Centers will be equipped with a waiting area with chairs and writing surfaces, counter surfaces for customers, customer service representative counters, a small mail room and space for backup fulfillment activities, a small printing and production area, an area for copier, printers, and fax machines, a small secured inventory and storage space for transponder inventory assigned to each location, an IT closet, an employee break room, a supervisor's office, separate accessible waiting/hearing room, and one small office for a Joint Board employee on assignment or inspection. The Kapsch Team will also ensure that the Walk-Up Centers shall meet American with Disabilities Act requirements for employees and customers and comply with all applicable laws, building codes and standards.		
CS-057	The Toll System Provider shall be responsible for the Walk-Up Center storefront build out and shall provide oversight and timely completion. The Walk-Up Center build out shall be subject to review and approval by the Joint Board. Furniture, equipment, Hardware, Software, supplies, computers, printers, faxes, chairs, waiting room chairs, IT equipment, etc. shall be the responsibility of the Toll System Provider. The budget for the Walk-Up Center build out, construction plans, the furniture plans, and all equipment and supply lists shall be submitted to the Joint Board for approval.	X	
	Proposer Response: Kapsch fully complies with requirement CS-057 , and this compliance is described below: The Kapsch Team understands and is in agreement with this requirement. The Kapsch Team will be responsible for the Walk-Up Center storefront build out and shall provide oversight and timely completion. The Walk-Up Center build out shall be subject to review and approval by the Joint Board. Furniture, equipment, hardware, software, supplies, computers, printers, faxes, chairs, waiting room chairs, IT equipment, etc. shall be the responsibility of The Kapsch Team. The budget for the Walk-Up Center build out, construction plans, the furniture plans, and all equipment and supply lists shall be submitted to the Joint Board for consideration and approval.		
CS-058	Toll System Provider shall procure all necessary Utility services for the Walk-Up Centers. The Joint Board shall pay TSP's actual, direct costs incurred for such services as provided in the Agreement. All Utility services must be pre- approved by the Joint Board before TSP enters into any agreement for services to be paid for by the Joint Board as Pass Through Cost Items.	X	
	Proposer Response: Kapsch fully complies with requirement CS-058 , and this compliance is described below: The Kapsch Team will procure all necessary utility services associated with the Walk-Up Centers, with the Joint Board paying actual direct costs for these services, as a pass-through. Prior to services being activated, The Kapsch Team will seek the Joint Boards approval before the Board enters into an agreement to pay for these pass-through cost items.		
CS-059	The Walk-up Centers shall be highly secured retail outlets, with separate secured rooms for inventory, a safe, and cash handling area. Access control and CCTV monitoring shall be required at both locations.	X	
	Proposer Response: Kapsch fully complies with requirement CS-059 , and this compliance is described below: The Kapsch Team understands that it will be responsible for the physical security of the Walk-Up Center facilities and property and as such will employ a best practice of "defense in depth" approach that employs appropriate combinations of overlapping and complementary controls to maintain secured access to infrastructure, systems, and work areas. This includes securing the walk-up center, as well as areas contained within used for the protection and storage of valuable assets. Only authorized personnel, including: specified Joint Board staff and Kapsch Team members, maintenance staff, and invited guests will be allowed to access the walk-up center facility. That access will be limited to specific areas as authorized by their project, position, and/or role. The integrated access control system enables authorized personnel to access the facility via security badges that are swiped over security panels at entry doors and policy requires these badges to be visible at all times when on premises. Invited guests will be credentialed and badged at the reception/waiting area. They require escort by appropriate Kapsch Team employee(s) at all times during their visit.		
CS-060	Call monitoring shall be part of the regular QA/QC process and shall be reported on the Monthly Operations and Maintenance Report. Toll System Provider shall cooperate and assist the Joint Board in the Joint Board's exercise of its right to conduct random monitoring of the CSC and the Walk-Up Centers and record the results.	X	
	Proposer Response: Kapsch fully complies with requirement CS-060 , and this compliance is described below: The Kapsch Team will perform ongoing, daily monitoring to track the required performance metrics. The plan will include random performance sampling including call monitoring. These programs are designed to emphasize the importance of quality service levels and provide us with the opportunity to reward our employees for providing exemplary customer service. Call monitoring results and reporting will be made available to the Joint Board and will be reported on the monthly Operations		

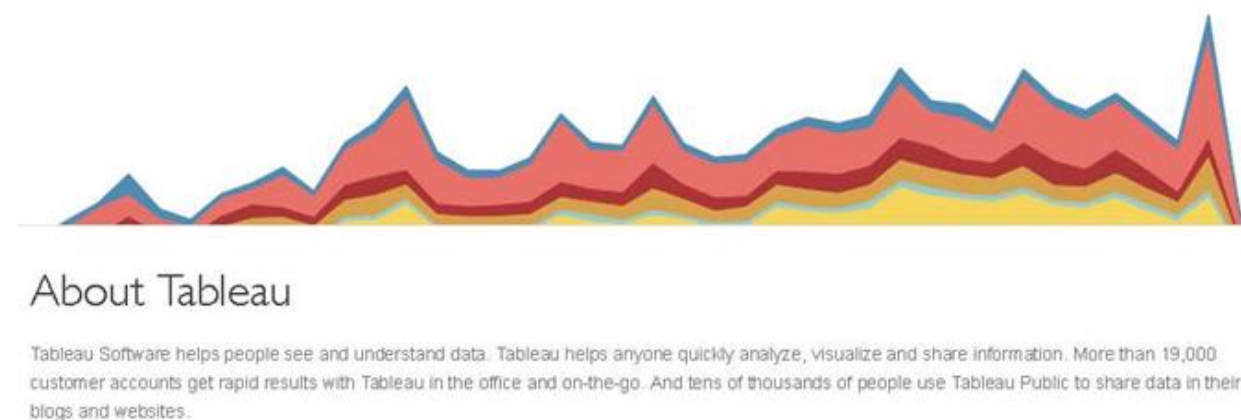
	and Maintenance report. The auditing program includes regular auditing and coaching of calls, e-mails, and correspondence. Our 100% call recording capabilities enable us to retrieve any call for inspection and feedback. Our Team engages in monthly calibration sessions to ensure consistency and we facilitate monthly peer calibration sessions as a means of helping the CSRs improve their skills and foster an environment of continuous learning.		
CS-061	The Toll System Provider shall perform ongoing customer satisfaction surveys regarding the CSC and submit the same for quarterly reviews by the Joint Board.	X	
	<b>Proposer Response:</b> Kapsch fully complies with requirement CS-061 , and this compliance is described below: Kapsch's CSC representatives shall request e-mail addresses and ask if customers would like to participate in a survey at the end of each interaction. The survey results shall be compiled by a third party at Kapsch's cost. Real-time survey results shall be provided to customer service agents and reporting made available to management to track feedback from customers. The system also shall have key words that shall be set up to alert management if certain positive or negative statements are made in the survey results.		
CS-062	The Toll System Provider shall use a training program for employees, such that those trained employees shall present a positive, professional image. This training program shall be reviewed and approved by the Joint Board. Employees shall be well-trained before handling customers' money, customers' accounts, or interacting with customers in person, on the telephone or through mail or e-mail. The Toll System Provider shall provide a training plan included with the BOS Plan that addresses all areas of the CSC, including technical use of the TCS systems and TCS technical processes, information regarding the Project and customer relations, including dealing with difficult customers and situations. The training program shall be ongoing and continuous.	X	
	<b>Proposer Response:</b> Kapsch fully complies with requirement CS-062 , and this compliance is described below: Kapsch shall provide an initial eight-day training program covering every phase of the operation is provided for CSC employees, including a review of the Company Policy Manual, PC-based exercises, education on call center techniques, role-playing, and a collection video and computer system orientation. Kapsch shall also provide a technical session which includes a description of the toll system and how it works. Upon completion of this extensive training, new agents are placed into an "academy bay" where they are assigned to a team of CSC Leads who assist agents with account handling. Additionally, the training/quality assurance team monitors their interactions and evaluates their performance as they transition to the call center floor. With continued on-the-job training, every employee is well informed of the highly sophisticated programs and procedures our company administers for its toll customers. Specific training shall be given that provides tools and methods for dealing with irate and emotional customers. We believe that continuing education is the key to CSC employee performance. Annually, we logs approximately 35,000 hours of training, Many of these training hours include refresher courses taken by staff throughout the year to re-emphasize key company policies (i.e. PCI compliance, Security Management, etc.) and procedures, as well as introduction of any new content. The Joint Board or its approved designees shall have the right to attend all scheduled training sessions at its discretion.		
CS-063	The Toll System Provider employees' appearance, demeanor, and behavior shall be professional and courteous at all times.	X	
	<b>Proposer Response:</b> Kapsch fully complies with requirement CS-063 , and this compliance is described below: The Kapsch Team will ensure that staff hired and assigned to the toll project shall maintain both a professional appearance and demeanor and are courteous and respectful at all times. Upon hire, all employees are given the Employee Handbook and are required to review and understand all work rules contained therein. Employees sign an acknowledgement stating that they have read and understand all information contained in the handbook. Section VI of the handbook outlines Employee Conduct and clearly states that all employees are expected to: <ul style="list-style-type: none"> <li>• Perform their job responsibilities to meet the quality and productivity standards that he company has established;</li> <li>• Be on time, ready to work at the start of their schedules and throughout all scheduled work periods;</li> <li>• Demonstrate responsibility, dependability and trustworthiness to the company;</li> <li>• Demonstrate commitment to goals;</li> <li>• Conduct themselves as mature, cooperative professionals</li> </ul> The Employee Handbook contains a section which specifically outlines Dress Code Standards, which defines the expectation that each employee act courteously, practice good hygiene, and dress neatly in a manner that represent the company in a positive and professional manner.		

CS-064	It is desired that the Toll System Provider compensate full-time and part-time employees with competitive salaries and all normal privileges, benefits and guarantees of employment that are afforded to the Toll System Provider's existing regular and part-time employees. This includes providing benefits such as medical coverage, retirement plans, sick leave, vacation pay and holiday pay. The Toll System Provider shall provide employees with a benefit package that keeps employee turnover to a low rate.		X
	<p>Proposer Response:</p> <p><b>Kapsch implements Value-Add CS-064, and this compliance is described below:</b></p> <p>The Kapsch Team shall compensate all full-time and part-time employees working on the LSIORB Project with competitive salaries and all normal privileges, benefits, and guarantees of employment that are afforded to Toll System Provider's existing regular and part-time employees, including providing benefits such as medical, dental, and vision insurance, life insurance, voluntary short term and long term disability insurance, flexible spending accounts, medical reimbursement accounts, savings program (401K), sick leave, vacation pay, and holiday pay.</p>		
CS-065	The Toll System Provider shall provide a dedicated CSC manager to oversee the CSC to ensure that procedures and internal controls within the CSC adhere to Performance Requirements. All CSC management and supervisory personnel assigned to the CSC shall be approved in advance by the Joint Board. The Toll System Provider shall submit a complete personnel and staffing plan included in the CSC Operations Plan outlining all job descriptions in each of the functional areas to the Joint Board for its review and approval.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-065 , and this compliance is described below:</p> <p>The Kapsch Team will identify and provide a dedicated CSC Manager to ensure that essential milestones and performance standards are met. The proposed CSC Manager is an experienced operations manager and has successfully led various CSC operations initiatives and implementations.</p> <p>Reporting directly to CSC management staff will be the supervisory personnel. Kapsch's approach to staffing is to build a flexible, well-trained supervisory team that is cross-trained in all aspects of operations including account management, violations processing, call center, back office and store front/front counter activities. Therefore, supervisors, as well as staff, will be able to adjust to daily activities to address varying levels of workload as well as have diversity in their duties and also provides an advancement path for the staff. The supervisory staff will be well trained in Standard Operating Procedures for all aspects of CSC Operations and the requirements for meeting performance metrics.</p> <p>The Staffing Plan is designed to respond to demand fluctuations while maintaining exceptional levels of customer service. It is our goal to hire, train, and retain the most effective and customer-oriented personnel possible. We will coordinate all staffing and hiring efforts and, as such, will have overall responsibility, in determining appropriate hires and adequate staffing levels to maintain the service levels outlined for the CSC.</p> <p>Staffing efforts will center on finding employees, who not only meet the qualifications and requirements for each position but who will adapt well to the Joint Board's approach to customer service and will prosper under our management approach to operations.</p> <p>Upon award, the Kapsch Team will provide a comprehensive staffing plan as part of the CSC Operations Plan that outlines staffing levels, job descriptions and core competencies for each of the functional areas.</p>		
CS-066	The Toll System Provider shall submit requirements for employment at the Toll System Provider's company and affiliated Subcontractors for CSC services in the CSC Operations Plan. These employment requirements shall outline items such as legal citizen status, photo identification from a governmental agency, ability to clearly speak English or English and Spanish, education requirements, etc. These requirements shall be reviewed and approved by Joint Board.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-066 , and this compliance is described below:</p> <p>Upon award, the Kapsch Team will provide requirements for employment as part of the CSC Operations Plan. The Management staff screens prospective employees for the skill set, outlined in each job description that is required to perform the tasks assigned to that position. These requirements vary from position to position and are clearly identified in each job description. We will then carefully interview every candidate to make sure they meet those requirements.</p> <p>For all positions, we require all staff to be able to read, write, and communicate effectively in the English language (for some positions there is a Spanish/bi-lingual requirement) and be a U.S. Citizen. As part of our standard employment policies, all applicants must pass a background check. Background checks include a police clearance from their jurisdiction of residence; a drug screening; a credit check to ensure no undue financial burden is apparent, no security fraud is revealed, and no financial judgments are pending or in place; the past work record will be verified as acceptable; and, when driving is required for a position, a driving record for the state in which they reside will be examined to ensure that there are no suspensions or revocations noted for their license, there are no more than 2 to 3 driving points applied and no DWI/DUI offenses have been incurred.</p>		
CS-067	The Toll System Provider shall provide CSC supervisors and staff to monitor the IVR and associated dashboard to ensure Performance Requirements are met. The supervisors shall move staff to appropriate operational tasks to ensure performance levels meet or exceed the Performance Requirements.	X	

	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-067 , and this compliance is described below:  The call center supervisory staff is responsible for managing intraday call center operations, to achieve business objectives and service level objectives by maximizing efficiency and occupancy. The call center supervisor is called upon to:</p> <ul style="list-style-type: none"> <li>• Manage staffing levels</li> <li>• Manage real-time adherence alerts</li> <li>• Monitor real-time ACD agent work state reports</li> <li>• Increase staffing levels and/or modify call routing to increase service levels</li> <li>• Communicate identified intraday risks to management and Joint Board staff</li> </ul>		
CS-068	<p>The Toll System Provider shall provide reports on all customer service representative account-related activities on a monthly basis in the Monthly Operations and Maintenance Report, and at any time upon request by the Joint Board. These reports shall be in a format approved by the Joint Board and shall include, at a minimum, calls received per day and by hour, calls received by the IVR per day and by hour, calls received by the IVR then directed to a CSR per day and by hour, calls directly to CSR per day and by hour, customer service representative availability, customer service representative utilization, telephone center activity logs, average wait time by day and by hour, average talk time by day and by hour, average after call work time by day and by hour, and abandoned calls by day and by hour. These reports shall be graphically presented for use by Joint Board and the CSR supervisory staff.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-068 , and this compliance is described below:  The Kapsch Team will provide reports on all CSR account-related activities on a monthly basis in the Monthly Operations and Maintenance Report, and at any time upon request by the Joint Board.  The Interactive Intelligence contact center software solutions provides all of the reports listed in the requirement (including, at a minimum, calls received per day and by hour, calls received by the IVR per day and by hour, calls received by the IVR then directed to a CSR per day and by hour, calls directly to CSR per day and by hour, CSR availability, CSR utilization, telephone center activity logs, average wait time, average talk time, average after call work time, and abandoned calls) in the format requested by the Joint Boards for any configurable time/reporting period required.  These reports shall be graphically presented for use by Joint Board and the CSR supervisory staff.</p>		
CS-069	<p>The Toll System Provider shall provide reports on all mail room activities on a monthly basis in the Monthly Operations and Maintenance Report, and at any time upon request by the Joint Board. These reports shall be in a format approved by the Joint Board and shall include, at a minimum, inbound mail by source, category, type and origin, outbound mail printed and prepared, incoming mail received and processed by the post office, daily cost of postage which shall be paid by the Joint Board and any backlog of incoming or outgoing mail.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-069 , and this compliance is described below:  The Kapsch Team will implement proven processes to ensure that each customer contact by mail is handled correctly, tracked to its resolution, and completed within the timeframe required by the Joint Board.  The Kapsch Team has developed specific procedures to handle incoming and outgoing mail to ensure that mail is handled responsibly. The mail will be opened, sorted by work type, and batched under dual-control (two staff members present at all times) and routed in accordance with SOPs. Controls will be in place to track work-batch types and custody of payments will be tracked through employee signatures at each transfer point in the process.  Reporting on mail room activity will include but not be limited to:</p> <ul style="list-style-type: none"> <li>• Incoming Mail Tracking Log (by date/source/category/type)</li> <li>• Outbound Mail Tracking Report (by date/source/category/type)</li> <li>• Postage Log</li> <li>• Mail Processing Log (by date/status/completion date/processing timeframes)</li> </ul>		
CS-070	<p>The Toll System Provider shall provide accounting and reconciliation reports on a monthly basis in the Monthly Operations and Maintenance Report, and at any time upon request by the Joint Board. These reports shall be in a format approved by the Joint Board and shall include at a minimum an accounting of cash and all other payments collected at the CSC storefronts, Walk-Up Centers, retail distribution outlets under contract, and by mail; account deposits, shortages and overages, adjustments due to daily reconciliations, and customer accounts balances, CSC and VPS activities; tolls collected and tolls posted, recommended fund transfers, deposits and withdrawals by CSC for each shift, number of Transaction types, deposits by payment type, cash deposits, low, high and average values of, the account balance activity including beginning-of-day and end-of-day balances, all tolls and fees, and replenishments, and interoperable account activities for</p>	X	



	<p>interoperable home and away Traffic Transactions and Financial Transactions reconciliation and settlements.</p> <p>Proposer Response:  Kapsch fully complies with requirement CS-070 , and this compliance is described below:  The Kapsch Team is providing a BOS Solution with an extensive array of accounting and reconciliation reports providing essential visibility into CSC and Toll operations. These reports have been demonstrated as effective administrative tools by other toll authority customers that use them for monitoring and managing their operations. CSC reports include a wide range of revenue and reconciliation reports, CSR and account activity reports, and transponder-related reports. The BOS system offers toll reconciliation and financial reconciliation and reporting, including but not limited to:</p> <ul style="list-style-type: none"> <li>• Revenue Summary: Monthly, quarterly, and yearly revenue status based on the selected options.</li> <li>• Customer Adjustments: Adjustments made to transactions/account balances by type.</li> <li>• Refunds: Reporting that shows accounts eligible for refunds as well as those accounts that have been refunded.</li> <li>• Cash Register: Provides complete cash register details for bank transactions by location.</li> <li>• Bank Reconciliation</li> <li>• Credit Card Reconciliation</li> <li>• Interoperability Reconciliation</li> <li>• Financials</li> <li>• Trial Balance</li> <li>• Daily, Weekly, Monthly &amp; Yearly</li> <li>• Profit &amp; Loss</li> <li>• Balance Sheet</li> <li>• Cost Center wise Report</li> <li>• Special Journal Report</li> <li>• Journal Report</li> <li>• General Ledger Report</li> </ul> <p>In addition, the IVR solution provides real-time reporting of contact center activities directly related to required performance metrics. The platform also maintains historical data of call-related and agent-related events in the system to provide historical reports, which can be viewed and filtered in numerous ways. The full-suite of CSC reports are designed to monitor, manage, enforce, and reconcile violation processing and enforcement activities, and include detailed and summary reports for violations, citations, and enforcement activities such as court action reports. Authorized Joint Board personnel will have access to the reports for ongoing monitoring of operations performance.</p>		
CS-071	<p>The Toll System Provider shall provide monthly staffing reports included in the Monthly Operations and Maintenance Report. The weekly staffing report shall be in a format approved by the Joint Board and shall include workforce number per job description, percentage of required positions filled, progress and efforts being made in filling the vacant positions and turnover rates.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement CS-071 , and this compliance is described below:  As part of our management processes, we presently create staffing reports that show the total effort of staff, including all Back Office and Maintenance. These reports help us ensure that the operation is working efficiently and staffed correctly. These reports include image review counts, time on task, read rates, correction rates, and error correction rates. They also include calls answered, call times, hold times and other IVR related metrics. Maintenance reports capture time to respond and time to repair. In total these reports will provide the Joint Board with a view of the workforce and show where staff is needed and how we are managing filling positions and staff rotation.</p>		
CS-072	<p>The Toll System Provider shall provide daily, weekly and monthly production and productivity reports, and accuracy reports related to the number of OCR images which required changes. These reports shall be stored in the TCS and shall be sortable by location and by image review clerk.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement CS-072 , and this compliance is described below:  The Kapsch Team provides clients with daily, weekly and monthly production and productivity reports related to image review processing. These reports include total number of transactions received, transactions processed by OCR, transactions processed by manual image review, percentage of transactions rejected/coded off</p>		



	(by type), productivity by agent, accuracy by agent. These reports will be stored and will be sortable by location and by image review clerk.		
CS-073	All facilities provided by the Toll System Provider shall be secure, and only authorized staff shall be allowed access into the facilities other than areas of the Walk-Up Centers designated for general public access. The Toll System Provider shall provide a security and access control management plan included with the BOS Plan that clearly identifies how access is granted, managed and maintained through employee attrition.	X	
	Proposer Response: Kapsch fully complies with requirement CS-073 , and this compliance is described below: Kapsch shall permit only authorized personnel, including: specified Joint Board and Toll System Provider members, maintenance staff, and invited guests to access the CSC and WUC facilities. That access shall be limited to specific areas as authorized by their project, position, and/or role. Kapsch shall utilize an integrated access control system that enables authorized personnel to access the facility via security badges that are swiped over security panels at entry doors and policies that require these badges to be visible at all times when on premises. Invited guests shall be credentialed and badged at the reception area. They shall be escorted by appropriate Toll System Provider employee(s) at all times during their visit.		
CS-074	The Toll System Provider shall ensure that no unauthorized personnel shall have access to individual records, payment histories, any personal information for Project Customers or interoperable toll customers. Paper records shall be locked when not in use, and password and identification controls shall be employed for data access.	X	
	Proposer Response: Kapsch fully complies with requirement CS-074 , and this compliance is described below: Data access will be controlled through access authorization by management ensuring only the appropriate personnel have access to any and all data. Personnel procedures require the immediate removal of access when personnel terminate employment. Additionally, routine audits are performed of the data security access. Our data centers have an appropriate firewall, VPN and access control systems employed to ensure data security and integrity, together with penetration scanning performed quarterly to ensure the highest available security.		
CS-075	The Toll System Provider shall not allow cellular telephones, cameras, or other electronic mobile devices capable of capturing still images or video in any area where customer information is visible other than areas of the Walk-Up Centers designated for general public access. CCTV shall be utilized to monitor and deter any and all illegal or unauthorized activities in the CSC. CCTV coverage shall cover all areas of the CSC floor operations, lockbox operations, image review operations, and Transponder fulfillment operations.	X	
	Proposer Response: Kapsch fully complies with requirement CS-074 , and this compliance is described below: Upon hire, all employees are given the Employee Handbook and are required to review and understand all work rules contained therein. Employees sign an acknowledgement stating that they have read and understand all information contained in the handbook. Section VI Employee Conduct and Section VII Company Technology & Equipment prohibit the use of the cellular telephones, cameras other electronic mobile devices while performing job activities or in areas where customer information is visible. Additionally all employees are required to complete a mandatory Security Awareness Training class annually to emphasize the importance of securing data. Kapsch will also employ CCTV coverage to monitor and deter any prohibited or illegal activities.		
CS-076	The TCS shall protect all customer data from access by unauthorized users. The TCS shall ensure that only properly authenticated customers can obtain access to their own data.	X	
	Proposer Response: Kapsch fully complies with requirement CS-076 , and this compliance is described below: Data access will be controlled through access authorization by management ensuring only the appropriate personnel have access to any and all data. Personnel procedures require the immediate removal of access when personnel terminate employment. Additionally, routine audits are performed of the data security access. Our data centers have an appropriate firewall, VPN and access control systems employed to ensure data security and integrity, together with penetration scanning performed quarterly to ensure the highest available security.		
CS-077	[Intentionally not used.]		
	No response required.		
CS-078	For customer authentication, the TCS shall require input of data fields (e.g., name, address, Transponder ID and license plate number) that uniquely identify that customer.	X	

	<p>Proposer Response:  Kapsch fully complies with requirement CS-078 , and this compliance is described below:  The Kapsch Team requires that all CSC staff request and input the following data fields in either creating accounts and/or confirming authorization for an account:</p> <ul style="list-style-type: none"> <li>• Name</li> <li>• Address</li> <li>• License Plate Number</li> <li>• Transponder ID (to be issues at time of account set-up; used as an identifier)</li> </ul> <p>Additional information such as phone number, e-mail address, vehicle information (make/model) are also obtained at the time of the account set-up but are not fields that are used for identifying the customer.</p>		
CS-079	For customer authentication, the Customer Website shall require input of data fields (e.g., name, address, phone number, Transponder ID and license plate number) that uniquely identify that customer.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement CS-079 , and this compliance is described below:  As part of the development of the customer website, the BOS will require input of data fields to uniquely identify the customer. For account customers name, address, phone, transponder ID and license plate number will be used. For video billing/violation accounts name, address, License Plate number and Notice ID will be used to identify the customer.  Once a customer has established an account, access to the account will also require a password.</p>		
CS-080	The Toll System Provider shall provide a separate phone system outside of the IVR system for typical business calls to be received by the CSC and the CSC staff.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement CS-080 , and this compliance is described below:  There will be a separate phone system outside of the IVR system, as required, for typical business calls to be received by the CSC and the CSC staff.</p>		
CS-081	The Toll System Provider shall provide an approved security and compliance policy manual to each of its employees and shall obtain a signed copy of the acknowledgement of the security and compliance manual and ensure that all employees working under the Toll System Provider in the CSC are aware of the security policies and enforce compliance.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement CS-081 , and this compliance is described below:  Upon award, the Kapsch Team will submit a Security and Compliance manual for review and approval to the Joint Board. Once approved all employees will be given a manual and sign an acknowledgement stating that they are aware of the security policies and compliance requirements and agree to abide by them. New hire employees will be given this manual as part of their on-boarding process and will sign the acknowledgement.</p>		
CS-082	It is desired that the Toll System Provider have a dashboard and monitor in the CSC, such that the screen is visible to all customer service representatives and supervisors for viewing the current status of calls, wait times, and number of customers on hold.		X
	<p>Proposer Response:  <b>Kapsch implements Value-Add CS-082, and this compliance is described below:</b>  The Kapsch Team shall provide monitors in our CSC to display current customer service metrics, including but not limited to current status of calls, wait times and number of customers on hold, by queue, and updated in real time.</p>		
CS-083	The Toll System Provider shall provide weekly payroll statements to the Joint Board and have records easily accessible and viewable for review by the Joint Board. At a minimum, the employee name, hours and role of employee shall be included in the payroll statements.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement CS-083 , and this compliance is described below:  The Kapsch Team will provide weekly payroll statements to the Joint Board that will include employee name, title, hours worked and will have records easily accessible and viewable for review by the Joint Board.</p>		

CS-084	The Toll System Provider shall provide operating procedures and manuals included with the BOS Plan that provide clear direction to CSC employees governing the basic roles of their job assignment. These manuals shall be available and on site for inspection and review by Joint Board throughout the Term of the Agreement.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-084 , and this compliance is described below:  The Kapsch Team will provide, as part of their Operations Plan, to the Joint Board Standard Operating Procedures (SOPs) for all of the functions/functional areas of the CSC. These SOPs will be reviewed by the board for approval.  Once approved, SOPs will be distributed to staff and made available electronically. Updates to SOPs will also be sent to the Joint Board for review and approval and once approved will be tracked according to the outlined document retention and control policy and update alerts will be sent to agents to advice of changes to procedures for review.</p>		
CS-085	The Toll System Provider is responsible for providing all Hardware, Software and/or any other equipment for the Toll System Provider's internal or program use purposes. The Toll System Provider shall provide all Hardware, Software, furniture, chairs, phones, headsets, mice, computers, power cords, wireless connectivity, and any other equipment and supplies to provide a fully operational CSC with all capabilities required by the Contract Documents. These include, without limitation, CSR phone bank equipment, furnishings and supplies; image review equipment, furnishings and supplies, Transponder fulfillment equipment, furnishings and supplies, supervisor and management computers, equipment, furnishings and supplies; mailroom operations equipment, furnishing and supplies; Violation processing equipment, furnishings and supplies, interoperability equipment and supplies, lockbox equipment, furnishings and supplies; administrative and courts collection equipment, furnishings and supplies, internal Software programs, third party programs such as MS Office, internal company email applications, quality control programs and associated Software programs and Hardware, all training equipment and training stations, all training materials, all policy and procedure manuals, printers, copiers, faxes, internet connections, desk and furniture supplies, office supplies, printer cartridges, and any types of shared drives or repositories, etc.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-085 , and this compliance is described below:  The Kapsch Team will be responsible for facility administration of the CSC and the two (2) WUCs. In order to support the various CSC operational functions, we will provide all infrastructures required for the contact center and walk-up centers, including phone systems, computers and other hardware requirements, software requirements and all associated utility, furnishing and equipment and building costs.  The CSC will be equipped with the necessary furnishings and office supplies needed to conduct operations. These items include but are not limited to: telephones, fax machines, copiers, printers, mailing equipment, chairs, and desks as well as consumable items such as toner, paper, pencils, pens, discs, forms, etc. The equipment and resources of the company exist for the benefit of the company and staff. Use of these resources will be limited to CSC operation's needs.</p>		
CS-086	It is desired that the Toll System Provider provide the ability to provide color high quality customer Correspondence from the CSC. Applicable Correspondence includes but is not limited to escalation, Violation and collection notices.		X
	<p>Note: The Proposer shall provide actual samples of all customer Correspondence in this Technical Response Form. This includes but is not limited to 1st, final and any intermediate invoices, Violations notices, debt referral letters, court templates, low balance notifications, credit card expiration or any other applicable Correspondence. Proposer shall identify text and configurable parameters on the Correspondence in this Technical Response Form.</p> <p>Proposer Response:  <b>Kapsch implements Value-Add CS-086, and this compliance is described below:</b>  Kapsch shall provide black and white, and at the request of the Joint Board, color high quality Correspondence from the CSC, including but not limited to escalation, Violation and collection notices.</p>		

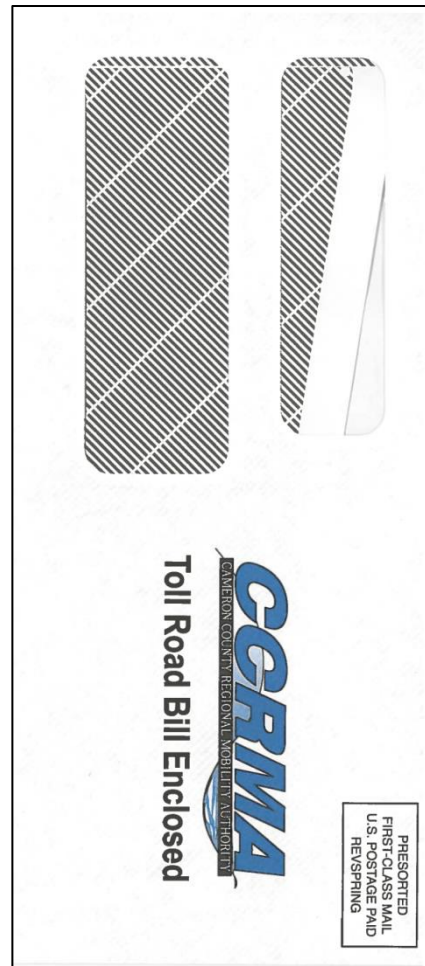


Figure 4-4 Toll Road Bill Envelope



Figure 4-5 Toll Road Bill Past Due Envelope

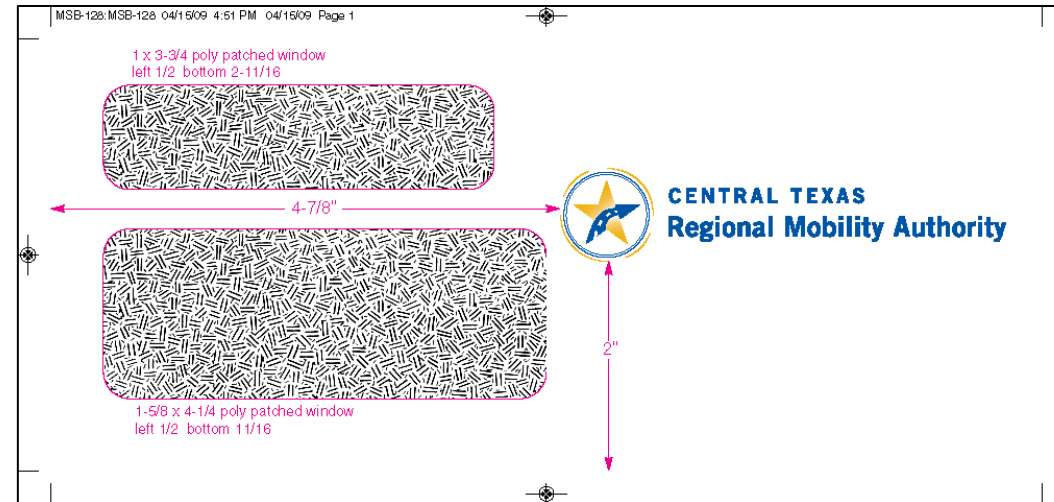


Figure 4-6 Return Envelope

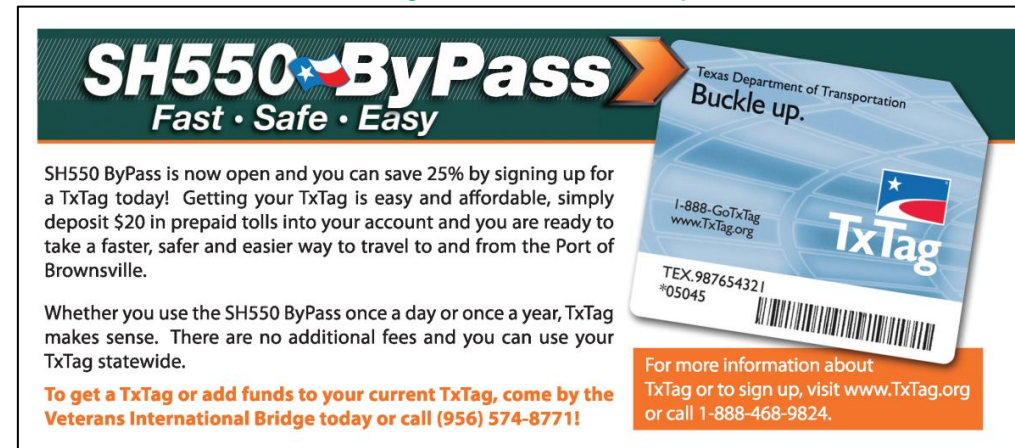


Figure 4-7 Example Insert

CS-087

The Toll System Provider shall provide phone lines capable of supporting a TCS that anticipates an increase in call volume that would be expected to be associated with handling 100,000 additional daily Traffic Transactions above the number of Traffic Transactions currently handled by the Toll System Provider at its existing CSC, or if Toll System Provider elects to provide a new CSC, phone lines capable of supporting a the call volume expected to be associated with 100,000 daily Traffic Transactions, assuming, in either case, that 50% of those Traffic Transactions occur as ETC Traffic Transactions at the commencement of Revenue Service.

X

Note: The Proposer shall at a minimum provide the following information in this Technical Response Form:  
 Total number of CSRs in call center  
 Total number of CSRs added to call center for the Project  
 Ratio of CSRs to supervisors  
 Ratio of CSRs to lead CSRs, if applicable.  
 Total number of customers serviced by the Call Center Currently on a daily basis  
 Total number of customers serviced by the Call Center Currently on a monthly basis  
 A description of how additional volume is handled such as a result of promotions, Violation mailings, or customer invoicing mailing?  
 If the CSC services numerous clients, a description of how priority of service to each client is determined.  
 Which clients receive priority and why on days of high call volumes?  
 Indicate the number of dedicated phone lines that will be provided to the Project.  
 Explain Proposer's existing phone system configuration and Proposer's anticipated phone system configuration upon the addition of the Project.

Proposer Response:

CS-088	The Toll System Provider shall provide dedicated commercial customer service specialists to service commercial LSIORB account holders.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement CS-088 , and this compliance is described below:          Due to the nature of commercial business and the size of the receivables, the Kapsch Team has specially trained agents to handle commercial and fleet accounts. This activity is driven more by documentation and by directly working with several contacts within the commercial entity. Agents assigned to support commercial and fleet accounts, will be tenured, senior level agents that have the soft skills as well as the technical skills necessary to overcome obstacles/issues and can work with decision makers for the commercial entity to arrive at a resolution.</p>		

**Toll Operations Center Requirements**

Req ID	Toll Operations Center (Section TO)	Required	Value Add
TO-01	The Toll System Provider shall provide a Maintenance Online Management System (MOMS) that supports maintenance operations for all Software and Hardware provided in connection with the Project or otherwise pursuant to the Agreement. The Toll System Provider shall also operate the MOMS. MOMS shall have two major components, a system monitoring component that provides alarms and configuration management and the inventory management to track all devices.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TO-01 , and this compliance is described below:</p> <p>Maintenance Online Management System</p> <p>The Kapsch MOMS monitors the performance and operations, and supports maintenance operations, of all hardware and software components in the ORT system. The MOMS is fully integrated into the TCS system and includes the following features:</p> <ul style="list-style-type: none"> <li>• 100% web based user interface and menu system</li> <li>• User authentication and configuration</li> <li>• Runs on the same hardware with the same features as the rest of the ORT system</li> <li>• Common Oracle database</li> <li>• System operations and performance monitoring</li> <li>• Standards based (SNMP) alarm interface for all Kapsch components</li> <li>• Real time system alerts and notification</li> <li>• Work Orders (manual and automatic) with notification, escalation, and updates</li> <li>• Component status and tracking</li> <li>• Inventory/Asset management including spare parts management</li> <li>• Availability, reliability and maintenance monitoring</li> <li>• Fully integrated reporting, dashboard engine, and report scheduler</li> </ul> <p>The functions and features of the Kapsch MOMS are shown in Figure 5-1 below:</p>		

Req ID

Toll Operations Center (Section TO)

Required

Value Add

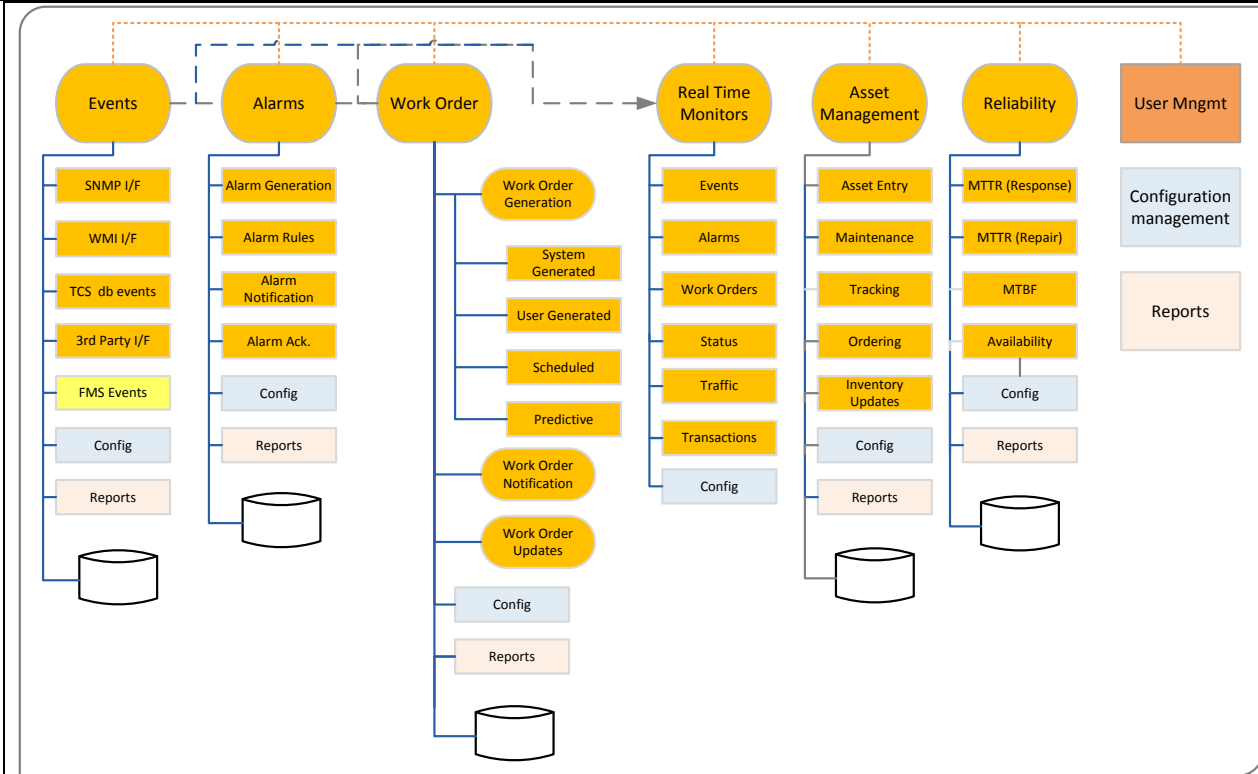


Figure 5-1 MOMS Functional Breakdown

system as a whole and allows operators immediate understanding of the overall system health and performance. All of these functions have configurable rules and reports.

**Staff Scheduling and Management**

A Staff scheduling module is present within MOMS and allows the time scheduling, entry, and management of all technical staff. The overall reporting engine is capable of running reports from this module, enabling comparison of scheduled work hours to actual work hours worked. This comparison allows us to maximize efficiency, detect work load trends and is one of the steps to evaluate the technician staff. This is presently used throughout our Technical Operations department giving the necessary insight to the managers overseeing the technicians.

**Component Status and Tracking**

Central to the functions of MOMS, is the management of system components. Components are defined in the system at time of implementation and several functions are available to manage their configuration and, when necessary, add new components.

Component Groups Configuration provides the functionality for associating components to component groups for monitoring and reporting and includes the ability to define new components as needed.

The columns in Figure 5-1 above represent the high level functions of the MOMS system.

- The **Events** column represents the different events happening throughout the system and the communication methods those events have utilized to alert the MOMS.

- **Alarms** are a function of the Events occurring in the system. Alarms are created off logical rules of events.

- **Work Orders** are created from Alarms by either automated or manual generation.

- **Real Time Monitors** continuously watch the status of events, alarms, and work orders of the system. The Real Time monitors are able to represent this data in a graphical dashboard for quick understanding of the health of the entire system. These Dashboards are configurable per user so always the appropriate information per user function is presented.

- The **Asset Management** aspect of the Kapsch MOMS can record and document every piece of hardware or software utilized throughout the entire system, including date of installation, warranty period remaining, MTBF information, and numerous other criteria that needs tracking. In addition to the above, overall system Reliability monitoring functionality is provided in the MOMS system.

- The **Reliability** tracks Key Performance Indicators (KPIs) of the system as a whole and allows operators immediate understanding of the overall system health and performance. All of these functions have configurable rules and reports.



Req ID

Toll Operations Center (Section TO)

Required

Value Add

**Component Groups Configuration**

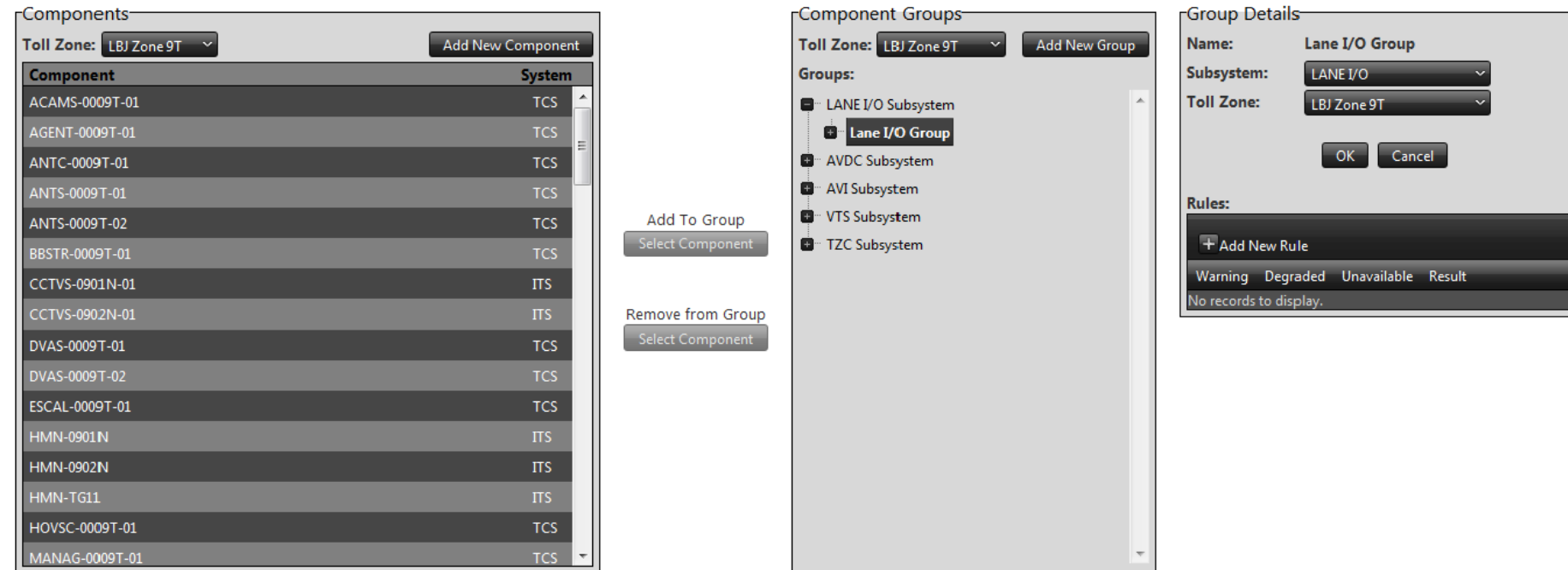


Figure 5-2 Component Groups Configuration Screen

Component Search provides the ability to locate and list components of interest; the search results include links to the details of the component and associated asset.

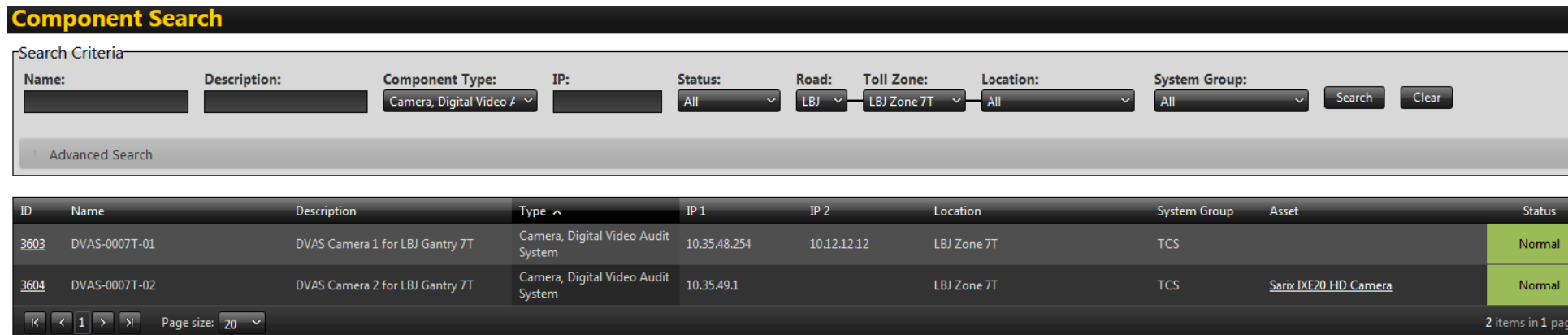


Figure 5-3 Component Search Screen

Clicking on a component ID link in the search results displays the component details interface where components can be updated and deployed or redeployed. The screen includes several tabs that provide component status history, current maintenance activity information, and associated asset deployment history. These screens allow technicians to diagnose specific problems at a component level, which might otherwise be undiagnosed at the asset level (i.e. faulty power connectors affecting the assets which could be overlooked if assets are merely replaced and work to specifications for an indeterminate amount of time before failure).

**Inventory (Asset Management)**

Req ID	Toll Operations Center (Section TO)	Required	Value Add
	<p>The Inventory system allows authorized users to search and view inventory data based on:</p> <ul style="list-style-type: none"> <li>• Part number</li> <li>• Serial number</li> <li>• Component type</li> <li>• Equipment type</li> <li>• Location</li> <li>• Others</li> </ul> <p>Information in the Inventory system is linked to the work order system and also tracks equipment reliability data (MTBF). Data tracked in the Inventory system includes:</p> <ul style="list-style-type: none"> <li>• Equipment Type</li> <li>• Equipment ID</li> <li>• Part Name</li> <li>• Part Number</li> <li>• Kapsch ID</li> <li>• Serial Number</li> <li>• IP Address</li> <li>• Manufacturer</li> <li>• Manufacturer Data</li> <li>• Vendor(s)</li> <li>• Vendor Information</li> <li>• Warranty status</li> <li>• Spare level</li> <li>• Reorder level</li> <li>• Manual locations</li> <li>• Photos</li> <li>• Equipment status</li> </ul> <p>Asset inventory search results include a link to the details of an asset. Clicking on an asset link in the search results opens the asset details screen where asset details can be edited and the asset can be managed. See the asset detail screen below:</p>		

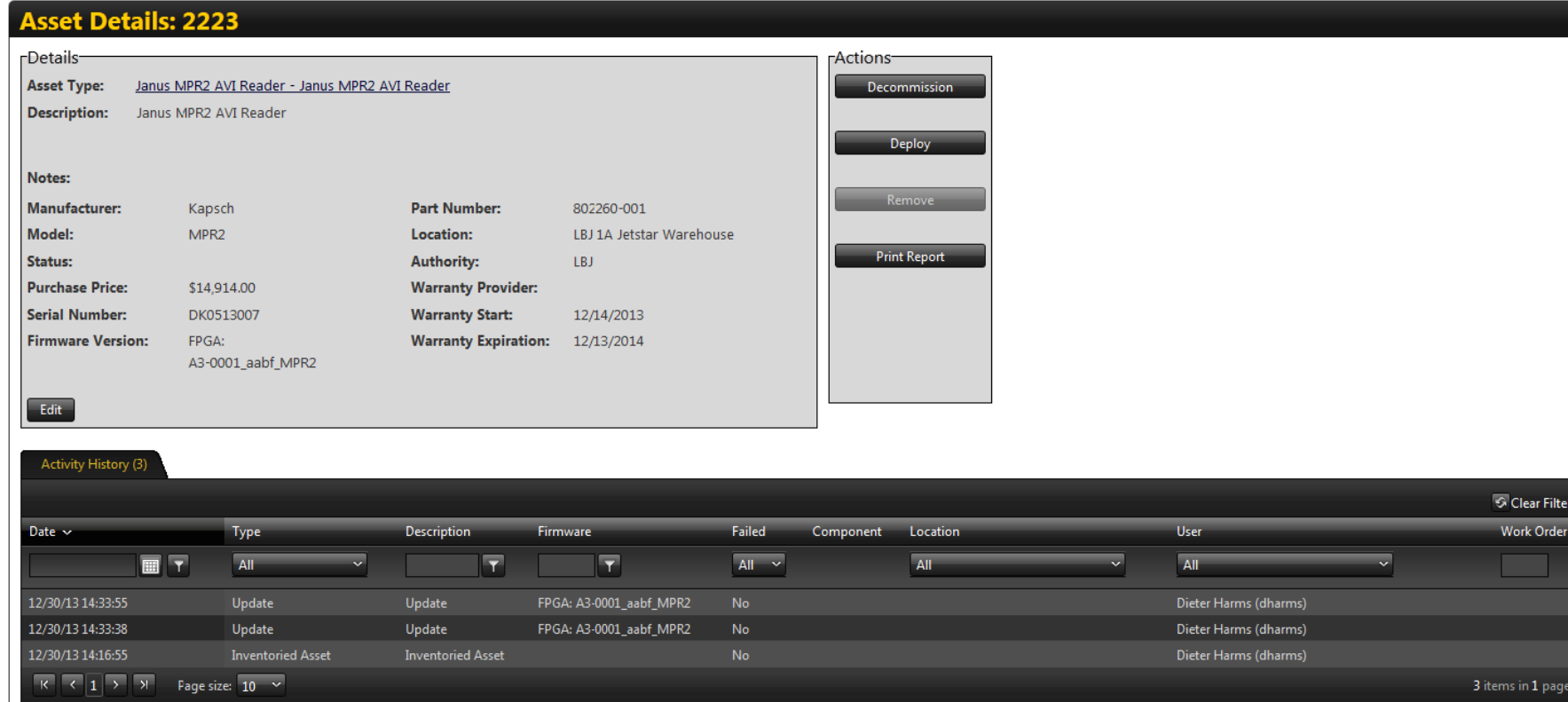


Figure 5-4 Asset Details

The interface includes a link to asset type details, which include:

- Part details
- Maintenance information
- Vendor information
- Detailed asset report
- History of the asset

**Reliability and Availability**

All system corrective maintenance work orders are tracked for response time and repair time. This data is used to generate maintenance performance data including Mean Time to Respond (MTTR) and Mean Time to Repair (MTTR) for the system. Inventory entries are used to update Mean Time Between Failures (MTBF) data. System availability calculations are made based on system alarm data and work order status updates.

**User Management**

The MOMS User Management functions provide the required support for managing user access and activity tracking. All user access to MOMS are managed through these functions which include:

- User configuration
- Add and edit user details
- Managing access rights

The User Configuration function displays the list of users defined in the system and provides a simple search capability to locate a specific user record, as in the following example.

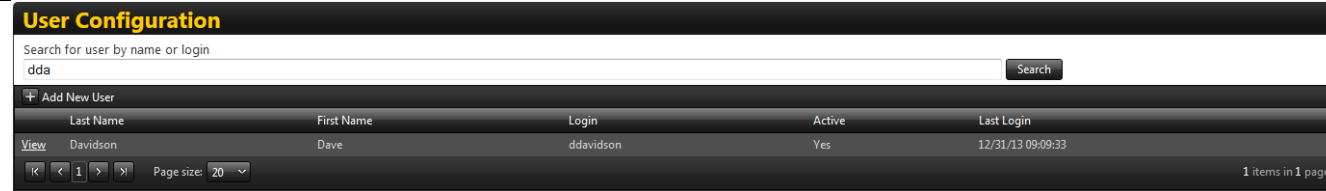


Figure 5-5 User Configuration

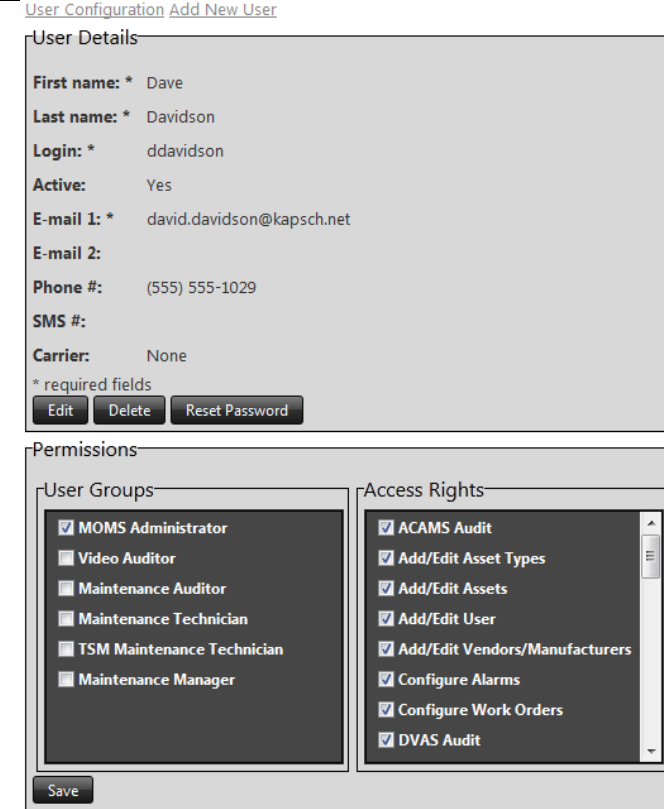


Figure 5-6 Sample User Details Screen

The Add New User option of the User Configuration screen provides an authorized user with the interface for defining a new user in the system and the View option provides the link to the details of an existing user record.

The User Details panel of the sample User Details screen, shown at right, displays the user data fields that make up the user record. Options include Edit to open the user data fields for updating, Delete to “soft delete” the user record, and Reset Password for setting and changing the user’s password.

The Permissions panel of the User Details screen provides the interface for managing user access rights. User Groups are predefined with certain access rights; selecting a user group (or groups) assigns those rights to the user. The permissions for a specific user can also be customized to add or remove individual access rights as deemed necessary.

After a user has been set up with a username, password, and appropriate access rights, the system keeps track of the user’s activities in the system, providing an audit trail of user actions for reporting purposes.

**Reporting**

Kapsch MOMS includes a wide variety of integrated reports and reporting functionality, including report scheduling, all of which are described in TP-019.

**Dashboard for Real-Time Monitoring of the ORT System**

Our proposal includes a Real Time Dashboard that allows authorized users to view overall system health as well as traffic information about all the TCS Toll Zones in the System including an audit trail of all transactions. **The Dashboards were developed with the specific intent to help LSIORB to improve business operations.** The Dashboard allows users to drill into screens that show a more detailed graphical view of all of the components in a TCS Toll Zone as well as more detailed information about the health status of the AVDC, ETC, DVAS and TZC components in a particular Toll Zone. Users can drill down to MOMS Work Order and Alarm screens, into a Toll Zone operational Status screen and into AVDC, ETC and ALPR individual status screens. Kapsch will work with the Joint Board to determine the final design of all Dashboards, however, below is a screenshot with an initial design:

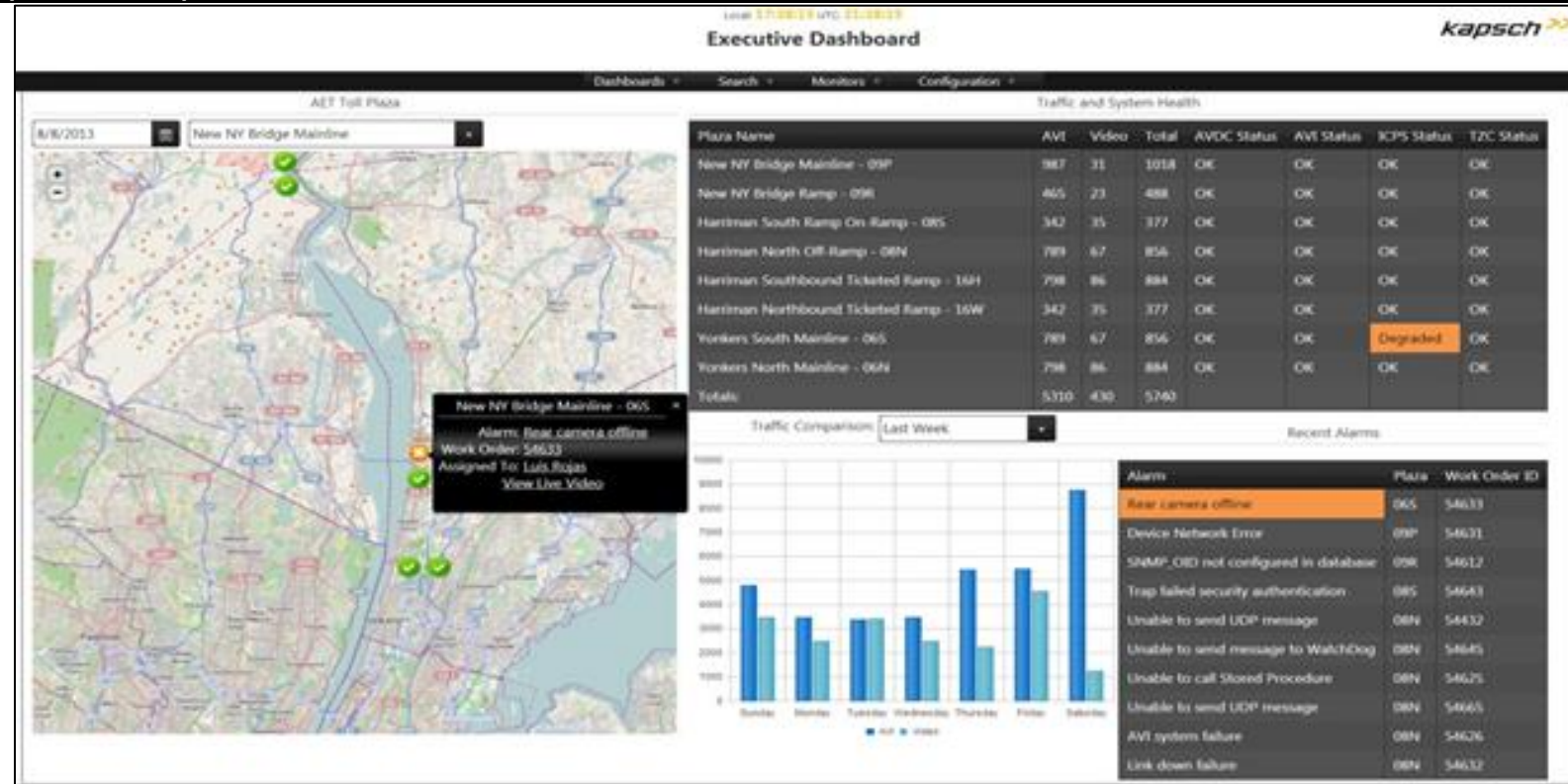


Figure 5-7 MOMS Main Dashboard - System Status Map (Sample)

As shown above, a mockup of the Main Dashboard shows an overall System Status Map view with the geographical locations of each of the Toll Zones in the System

- Toll Zones that are operating normally are represented by ✓
- Toll Zones with a Low Priority Alarm are graphically represented by ⚠
- Toll Zones with a High Alarm are represented with by ✖ (as shown in example shown in Figure 5-7)
- Toll Zones with Critical Priority Alarm are represented by ✖.

In the example shown in Figure 5-7, there is a toll zone in degraded mode. As the user rolls over the pointer, a pop up displays showing information about the Alarm, Work Order number and who is assigned to it as well as a selectable link to the DVAS camera which will bring a live video feed of the Toll Zone. On the right of the screen, the “Traffic and System Health” grid shows traffic summary data and health information about each subsystem (AVDC, ETC, ALPR, T2C) for all TCS Toll Plazas.

The Kapsch custom dashboard tools are implemented using Oracle’s Business Intelligence (BI) tool. **This allows LSIORB executives and managers to customize interactive dashboards to include relevant information based on their role.**

If a subsystem is degraded it will be highlighted in orange as shown. If a subsystem is unavailable it will be highlighted in red. The color code mapping of the devices and subsystem status is configurable and will be confirmed in collaboration with LSIORB during the design of the project.

The “Recent Alarms” grid show the last Alarms reported by the MOMS system with color code representing their priority. The color code for Alarms priorities are Yellow for Low, Orange for High and Red for Critical. The Dashboard also shows a bar graph that allows a quick comparison of traffic data between the current date/time to a day ago, a week ago, a month ago or a year ago. Users can click on TCS Toll Zone on the map view or on a row on the System Health grid and they will be brought to a top view of the TCS Toll Zone that shows the status of all the devices at the Toll Zone. Below is a similar screen used in another project that shows the status of specific devices in the lanes.

Req ID

Toll Operations Center (Section TO)

Required

Value Add

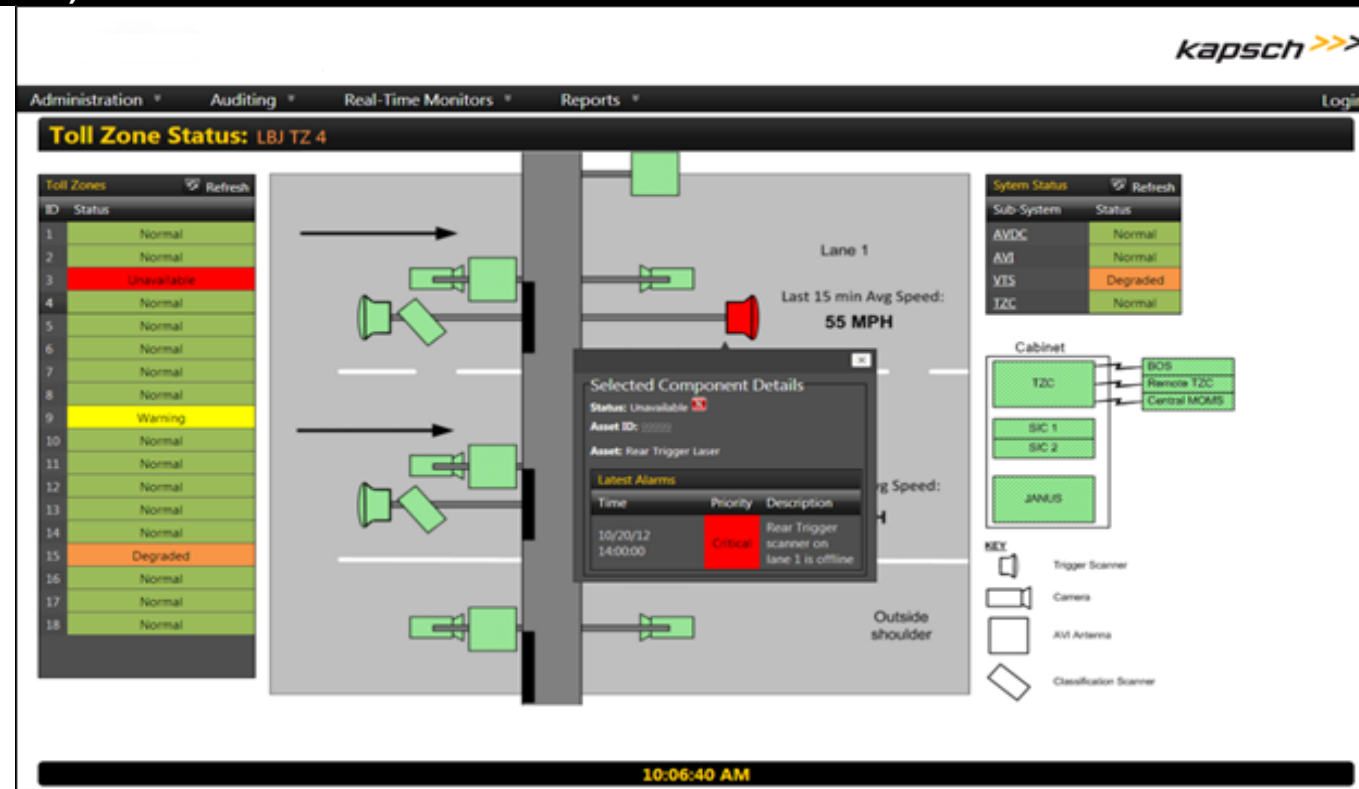


Figure 5-8 Toll Zone Component Status Screen

The LSIORB version of the Toll Zone Status Screen, sample shown in Figure 5-8 above, will show a pictorial top view of the Status of the Toll Zone selected with the following information:

- Each component on the Toll Zone color code Green if it is operating Normal, Yellow if a component has reported a Warning, Orange if a High Level alarm is detected and Red if there is a Critical problem with the component.
- Operational status of the AVDC, ETC, Video and TZC sub-systems
- Connectivity Status to the RSS Host
- Status of other Toll Zones on the same road, by clicking on a row the same Toll Zone View will be shown for the selected Toll Zone
- Travel Direction and Average Speed in the Lane

By rolling over the mouse on top of a component, a pop-up window will show the following information:

- Status of the Component
- Link to Asset ID details page
- Asset Description
- Links to the Alarm Detail Screen in case the device is showing an Alarm

Above, in Figure 5-8 is a screen sample from another project where the pop up appears after rolling the mouse over the Rear Trigger Sensor on Lane 1:

Other Dashboard screens our solution includes:

- Live DVAS screen that shows live video of a selected Toll Zone with a grid showing information about the transaction. From this dashboard, an authorized user can have direct access to transaction details screens in real time.
- File Transmission Status that shows the transmission status of the latest transaction and TSL files exchanged with the TCS Toll Zone Controllers and the Facility Host.

Req ID	Toll Operations Center (Section TO)	Required	Value Add
TO-02	The Toll System Provider shall provide support and maintenance services for all Systems provided by the TSP, including but not limited to: 1) maintaining the access control system configuration; 2) maintaining the databases, applications, and the Data Mart including data aggregation processes, database optimization of the database schema and Data Mart schema; 3) maintaining proper indexing on all databases; 4) responding to all MOMS alerts and performing repairs and corrections, and 5) providing Software fixes for defects and malfunctions.	X	
	<p><b>Proposer Response:</b> Kapsch fully complies with requirement TO-02 , and this compliance is described below: Kapsch will provide an experienced team of maintenance managers, engineers and technicians who are familiar with Level 1, 2, and 3 maintenance. We have maintained over 300 lanes of roadside tolling and ITS equipment in North America, with 24/7/365 coverage for several agencies, including the E-ZPass network in the northeast and integrated roadways in Dallas-Fort Worth.</p> <p><b>Access Control Systems Configuration</b> The access control system itself is described further in section AC-001, and the configuration and management of the systems is controlled out of the toll operations centers specific to the area of responsibility. The BOS Toll Operations Center, housed in Austin, TX, has an existing access control system and process in place meeting all PCI level standards necessary. The existing system will continue to be utilized for the personnel specific to the LSIORB project. The existing Access Control system developed for the controlling access to the roadside system will be utilized to cover all equipment at the roadside including cabinets and/or roadside buildings. The walk-in centers will utilize an off-the-shelf access control and monitoring system</p> <p><b>Application and Database Maintenance</b> The application maintenance, including all Level 3 maintenance activities, will occur in the software development locations in charge of the respective Toll Collection System and Back Office System. The Toll Collection System software maintenance is handled out of our Kingston, NY technical center. The facility houses over 30 software engineers who continually develop improvements to the existing system and perform maintenance on operational systems. The Back Office System software maintenance, including all database and Data Mart maintenance and optimization, is handled out of the Austin, TX facility. The Austin facility handles all modifications and enhancements to the existing BOS and customer service portals. The BOS provided in this project is currently running the operations of over 600 clients in 38 states around the country.</p> <p><b>Database Indexing</b> All database indexing for the Data Mart will occur out of the Austin, TX facility which will house the databases used for this project.</p> <p><b>Maintenance Response</b> Our MOMS will alert technicians of potential faults and errors in the system 24x7. Specific alarms will be configured to alert specific technicians to a problem, the escalation of MOMS alerts is described in Section TO-010.</p> <p><b>Software Maintenance on Defects and Malfunctions</b> Kapsch has a proactive process to ensure that all first-party and third-party software utilized by the Toll Collection System is maintained at fully supported versions from their original manufacturers for the duration of the maintenance period. This process will include:</p> <ul style="list-style-type: none"> <li>• Immediate notification of the Developer whenever an update or patch is released, by Kapsch or Manufacturer</li> <li>• Application of all patches and software updates to third-party software necessary to maintain functionality and the highest levels of security</li> </ul> <p>This process will also include all custom application software testing and updates to ensure continued operations with the latest patches and releases of third-party applications. All patches and updates will be applied by Kapsch within sixty (60) calendar days of release, with approved testing and approval from the Joint Board.</p>		
TO-03	The TSP shall operate and maintain the TCS so as to provide comprehensive System monitoring services. The Toll System Provider shall include a secure web based real time monitoring system to monitor and report the status of all System components; and assign priorities and actions to events. The monitoring system shall at a minimum: 1) monitor Hardware and Software health; 2) provide and operate a dashboard that graphically displays components' health; and 3) include comprehensive log reporting capabilities. Monitoring of Software shall include monitoring of databases, applications and processes in the system.	X	
	<p><b>Proposer Response:</b> Kapsch fully complies with requirement TO-03 , and this compliance is described below: The dashboard will enable the Joint Board staff to verify/ reconcile/ audit toll transactions from all lanes, to review video of events and/ or incidents, and to identify possible issues based on real time monitoring. The web based system provides the capability for real time video and toll lane transaction activity monitoring all</p>		

Req ID

Toll Operations Center (Section TO)

Required

Value Add

aspects of the TCS.

Monitor Hardware and Software Health

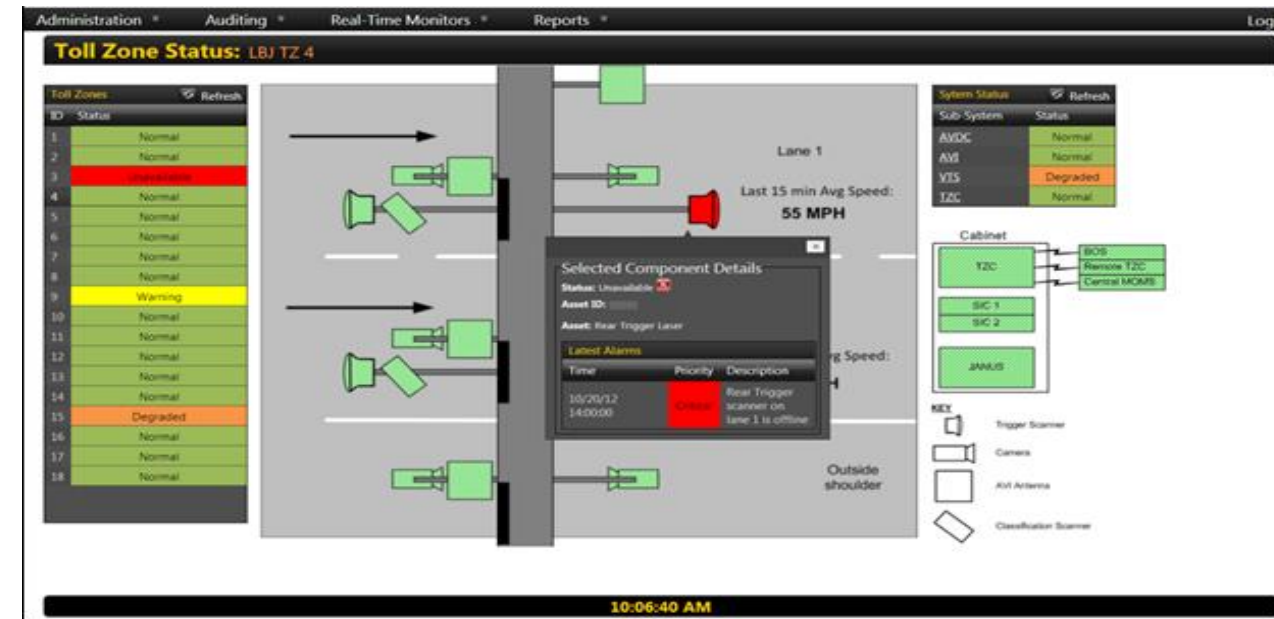


Figure 5-9 Toll Zone Component Status Screen

The LSIORB version of the Toll Zone Status Screen, sample shown in Figure 5-9 above, will show a pictorial top view of the Status of the Toll Zone selected with the following information:

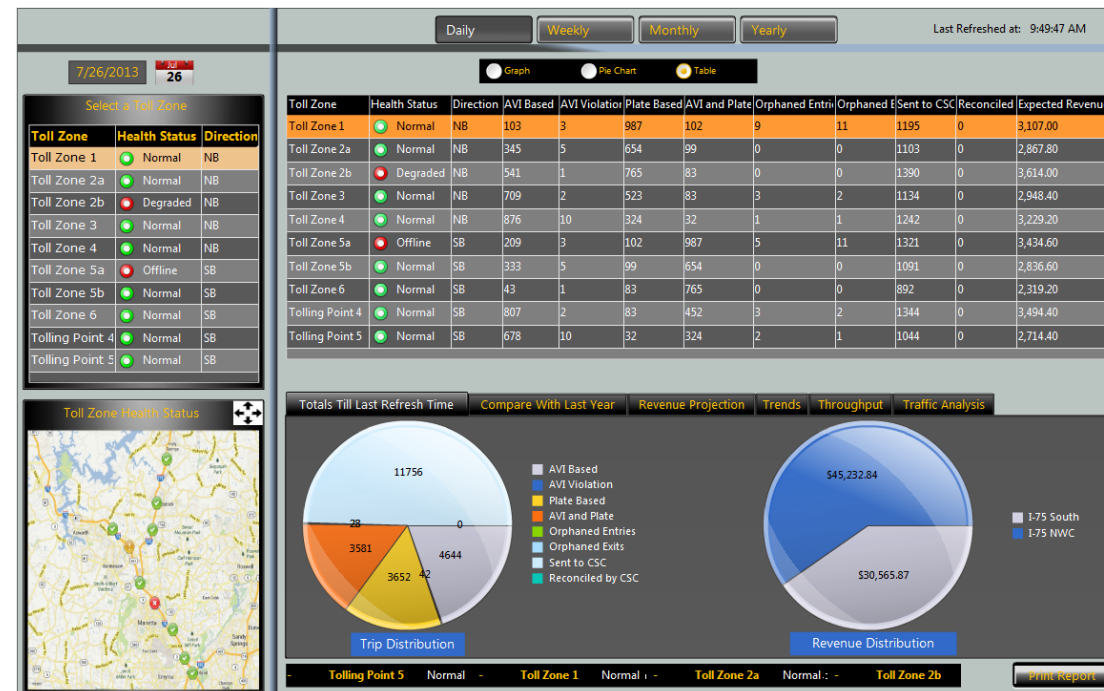
- Each component on the Toll Zone color code Green if it is operating Normal, Yellow if a component has reported a Warning, Orange if a High Level alarm is detected and Red if there is a Critical problem with the component.
- Operational status of the AVDC, ETC, ALPR and TZC sub-systems
- Connectivity Status to the ORT Host
- Status of other Toll Zones on the same road, by clicking on a row the same Toll Zone View will be shown for the selected Toll Zone
- Travel Direction and Average Speed in the Lane



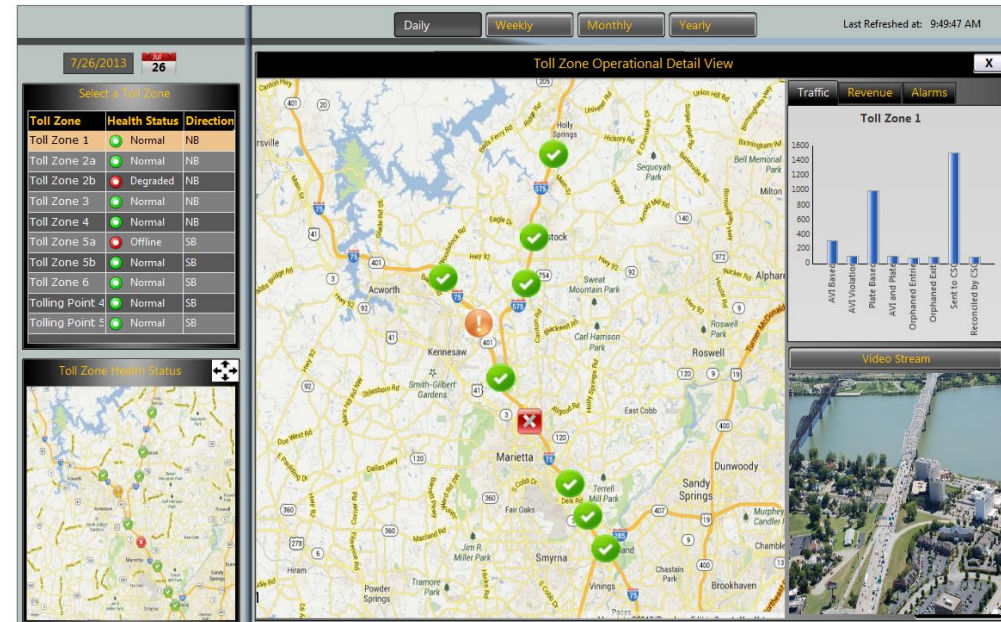
Executive Dashboard



Executive Dashboard



Executive Dashboard



Comprehensive Reporting Capabilities

105-Daily Traffic & Revenue



Report Criteria: Print Time: 07/24/2013 11:34:00, Date: 07/07/2013, Facility: All, Toll Zone: Toll Zone 2A

Printed By: Parik Panwar, Lane: All, Traffic Type: Peak Hours, Before/After Audit Data: Before Audit Data

Report Description: This report shows the traffic volume and the revenue for a selected date on a hourly basis. Report shows the summary level data and the data for the individual hour of the day.



105-Daily Traffic & Revenue



Trans Time Interval	Daily Traffic Count								Expected Revenue Amount							
	AVI Based	AVI Violation	Plate Based	Orphaned Entries	Orphaned Exits	Sent To BOS	Sent To CSC	Reconciled by CSC	AVI Based	AVI Violation	Plate Based	Orphaned Entries	Orphaned Exits	Sent To BOS	Sent To CSC	Reconciled by CSC
00:00-00:59	34	2	3	0	0	34	34	0	\$59.5	\$3.5	\$5.25	\$0	\$0	\$59.5	\$59.5	\$0
01:00-01:59	4	0	15	0	0	19	19	0	\$7	\$0	\$26.25	\$0	\$0	\$33.25	\$33.25	\$0
02:00-02:59	0	0	5	0	0	4	4	0	\$0	\$0	\$8.75	\$0	\$0	\$7	\$7	\$0
03:00-03:59	1	1	2	0	0	3	3	0	\$1.75	\$1.75	\$3.5	\$0	\$0	\$5.25	\$5.25	\$0
04:00-04:59	4	0	4	0	0	8	8	0	\$7	\$0	\$7	\$0	\$0	\$14	\$14	\$0
05:00-05:59	20	3	17	2	3	30	30	0	\$35	\$5.25	\$29.75	\$3.5	\$5.25	\$52.5	\$52.5	\$0
06:00-06:59	25	5	35	2	2	60	60	1	\$43.75	\$8.75	\$61.25	\$3.5	\$3.5	\$105	\$105	\$26.25
07:00-07:59	15	0	0	0	0	14	14	0	\$26.25	\$0	\$0	\$0	\$0	\$24.5	\$24.5	\$0
08:00-08:59	35	5	50	0	0	80	80	15	\$61.25	\$8.75	\$87.5	\$0	\$0	\$140	\$140	\$1.75
09:00-09:59	56	1	73	0	1	127	127	78	\$98	\$1.75	\$127.75	\$0	\$1.75	\$222.2	\$222.2	\$136.5
10:00-10:59	43	2	102	2	2	140	140	138	\$75.25	\$3.5	\$178.5	\$3.5	\$3.5	\$245	\$245	\$525
11:00-11:59	79	0	234	0	0	280	280	280	\$138.2	\$0	\$409.5	\$0	\$0	\$490	\$490	\$490
12:00-12:59	222	2	102	7	7	302	302	300	\$388.5	\$3.5	\$178.5	\$12.25	\$12.25	\$528.5	\$528.5	\$241.5
13:00-13:59	198	0	203	3	3	400	400	400	\$346.5	\$0	\$355.25	\$5.25	\$5.25	\$700	\$700	\$700
14:00-14:59	201	43	304	4	4	501	501	480	\$351.5	\$0	\$532	\$7	\$7	\$876.7	\$876.7	\$1750
15:00-15:59	102	2	213	1	1	303	303	0	\$178.5	\$3.5	\$372.75	\$1.75	\$1.75	\$530.2	\$530.2	\$0
16:00-16:59	412	4	617	6	6	1019	1019	1000	\$721	\$7	\$1079.75	\$10.5	\$10.5	\$1783	\$1783	\$840
17:00-17:59	201	7	573	0	0	734	734	734	\$351.75	\$12.25	\$1002.75	\$0	\$0	\$1284	\$1284	\$1284.5
18:00-18:59	343	2	789	2	2	1110	1110	1000	\$600.2	\$3.5	\$1380.75	\$3.5	\$3.5	\$1942	\$1942	\$726.25
19:00-19:59	212	2	122	7	7	312	312	300	\$371	\$3.5	\$213.5	\$12.25	\$12.25	\$546	\$546	\$525
20:00-20:59	109	0	321	2	3	415	415	415	\$190.75	\$0	\$561.75	\$5.25	\$5.25	\$726.2	\$726.2	\$1750
21:00-21:59	15	0	267	2	2	280	280	0	\$26.25	\$0	\$467.25	\$3.5	\$3.5	\$490	\$490	\$0
22:00-22:59	24	2	123	3	3	146	146	45	\$42	\$3.5	\$215.25	\$5.25	\$5.25	\$244.5	\$244.5	\$5.25
23:00-23:59	0	0	34	4	4	34	34	3	\$0	\$0	\$59.5	\$7	\$7	\$59.5	\$59.5	\$0
Total	5699	200	4227	230	280	9920	9920	8135	\$9973.25	\$350.00	\$7397.25	\$402.50	\$402.50	\$17260	\$17360	\$14236.35

Req ID

Toll Operations Center (Section TO)

Required Value Add

111-Transaction Audit



Report Criteria [Highlight View](#)

Print Time: 07/12/2013 11:28:11 Printed By: Parik Panwar  
 Revenue Date: 07/10/2013  
 Road: I75 South

Report Description This report shows the reconciliation data for the transactions within the selected parameters. Original Transaction data will be compared with the CSC and any discrepancy will be highlighted.

Transaction Count

Location	Starting ID	Ending ID	Toll Zone Controller	Facility Host Received	Discrepancy	Gaps Detected
Tolling Zone 1	100001	105409	5408	5408	0	0
Tolling Zone 2a	20090	29876	9786	9783	-3	1
Tolling Zone 2b	42230	43987	1757	1757	0	0
Tolling Zone 3	124892	145298	20406	20406	0	0
Tolling Zone 4	138953	139999	1048	1048	0	0

Transaction Gaps

Location	Starting ID	Ending ID	Start Time	End Time	Missing	MOMS Alarm ID
Tolling Zone 2a	21899	21901	07/10/2013 10:01:01	07/10/2013 10:02:10	3	9786

Report Summary

Total Transactions At Toll Zone Controller: 38403  
 Total Transactions Received At Facility Host: 38395  
 Total Missing: 3  
 Total Gaps Detected: 1  
 Total Alarms Generated: 1

111-Transaction Audit



Report Criteria [Highlight View](#)

Print Time: 07/12/2013 11:28:11 Printed By: Parik Panwar  
 Revenue Date: 07/10/2013  
 Road: I75 South

Report Description This report shows the reconciliation data for the transactions within the selected parameters. Original Transaction data will be compared with the CSC and any discrepancy will be highlighted.

Transaction Count

Location	Starting ID	Ending ID	Toll Zone Controller	Facility Host Received	Discrepancy	Gaps Detected
Tolling Zone 1	100001	105409	5408	5408	0	0
Tolling Zone 2a	20090	29876	9786	9783	-3	1
Tolling Zone 2b	42230	43987	1757	1757	0	0
Tolling Zone 3	124892	145298	20406	20406	0	0
Tolling Zone 4	138953	139999	1048	1048	0	0

Transaction Gaps

Location	Starting ID	Ending ID	Start Time	End Time	Missing	MOMS Alarm ID
Tolling Zone 2a	21899	21901	07/10/2013 10:01:01	07/10/2013 10:02:10	3	9786

Report Summary

Total Transactions At Toll Zone Controller: 38403  
 Total Transactions Received At Facility Host: 38395  
 Total Missing: 3  
 Total Gaps Detected: 1  
 Total Alarms Generated: 1

113-Traffic and Revenue Reconciliation



Report Criteria [Highlight View](#)

Print Time: 07/24/2013 11:28:22 Printed By: Parik Panwar  
 Period Type: Daily Road: I75 NWC  
 Revenue Date: 07/10/2013 Toll Location: All

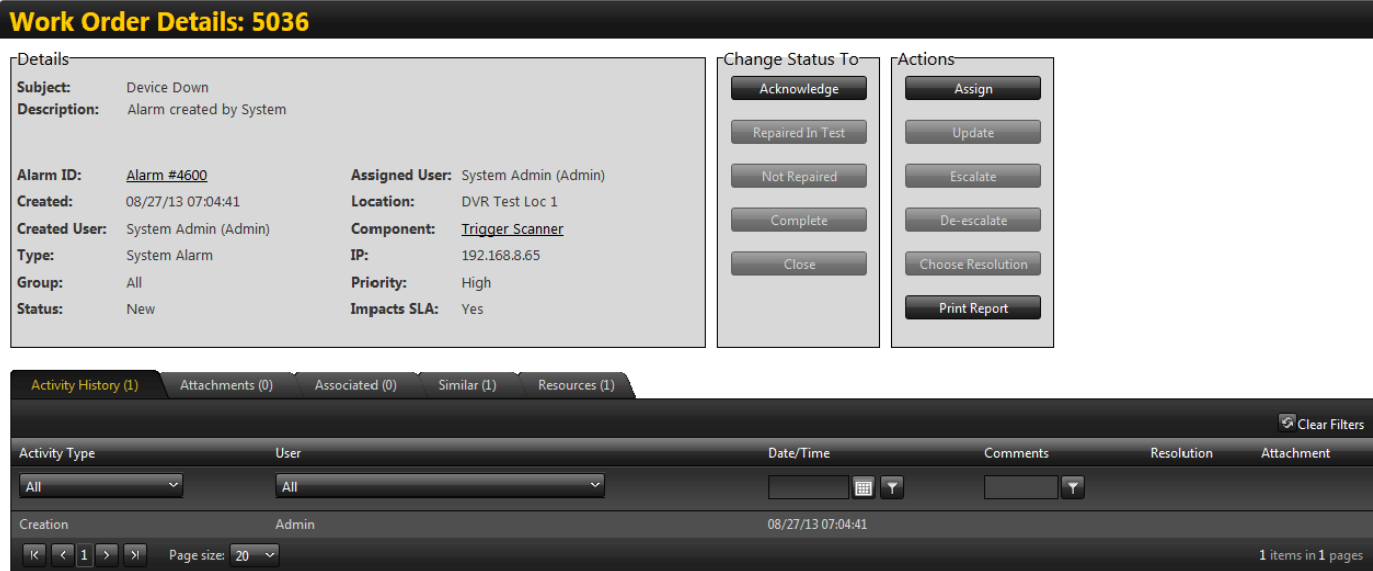
Report Description This report shows the reconciled traffic and revenue data for a selected date. This report could be generated per Roadways, per toll location.

Traffic and Revenue Reconciliation Summary

Type	Traffic Count	BOS Acked	BOS UnAcked	BOS Accepted	BOS Rejected	Expected Revenue	BOS Realized Revenue	Revenue Discrepancy
AVI Based	7,892	7,885	7	7,885	7	\$13,811	\$12,798.75	\$12.25
AVI Violation	45	45	0	45	0	\$78.75	\$78.75	\$0.00
Plate Based	4,562	4,559	3	4,559	3	\$7,983.5	\$7,978.25	\$5.25
AVI and Plate	12,454	12,444	10	12,444	10	\$21,794.5	\$21,777	\$17.5
Orphan Entries	15	15	0	15	0	\$26.25	\$26.25	\$0.00
Orphan Exits	16	15	1	15	1	\$28	\$26.25	\$1.75
Totals	24,984	24,963	21	24,963	21	\$43,722	\$43,722	\$36.75

TO-04 The TSP shall provide and maintain the TCS by using the automated MOMS. The TCS shall provide system-generated maintenance job tickets, manually created

X

Req ID	Toll Operations Center (Section TO)	Required	Value Add
	job tickets, information indicating how the preventive maintenance work is scheduled in the System, information indicating how repair activity is logged, reported and resolved in the System.		
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TO-04 , and this compliance is described below:</p> <p><b>Work Orders</b></p> <p>Work orders are used to initiate, dispatch, and track system maintenance activities. The work order types that are supported include:</p> <ul style="list-style-type: none"> <li>• System Corrective – alarm-generated work order</li> <li>• User Corrective - created by a user that is non-recurring</li> <li>• User Preventive Maintenance - created by a user and has a schedule associated with it</li> <li>• System Predictive - created by the system based on a detected predicted situation</li> </ul> <p>The Work Order Scheduler application provides the interface for users to create corrective and preventive types of work orders and manage their scheduling. The interface provides for setting recurring work order schedules, assignment to a selected individual, setting of priority, association with a subsystem, etc.</p> <p>When a work order is created, whether system or user initiated, it is displayed on the Work Order Monitor. Key features of the monitor are:</p> <ul style="list-style-type: none"> <li>• Filtering of displayed data</li> <li>• Links to the details of the work order, initiating alarm, and affected component</li> <li>• Color coding of the alarm priority</li> </ul> <p>Work orders can be searched. Similar to the work order monitor, the search results include links to the details of the work order, initiating alarm, and affected component. Clicking on a work order link in the search results (or the work order monitor) opens the work order details interface where work orders can be updated, re-assigned, placed in test, and closed, among other management tasks. See the work order details screen below:</p>  <p>Figure 5-10 Work Order Details Screen</p> <p>All work order details are displayed in Figure 5-10, those details include:</p> <ul style="list-style-type: none"> <li>• Links to the initiating alarm and affected component</li> <li>• Links to troubleshooting resources relevant to the initiating alarm type</li> <li>• The ability to add attachments and data to that work order instance</li> <li>• Attaching key information to future work orders of the same type (knowledgebase)</li> <li>• Viewing similar work orders to aid in troubleshooting based on previous experience</li> </ul>		

Req ID

Toll Operations Center (Section TO)

Required

Value Add

- Viewing the history of activities associated with the current work order
- The ability to generate the work order details report at any time

**Staff Scheduling and Management**

A Staff scheduling module is present within MOMS and allows the time scheduling, entry, and management of all technical staff. The overall reporting engine is capable of running reports from this module, enabling comparison of scheduled work hours to actual work hours worked. This comparison allows us to maximize efficiency, detect work load trends and is one of the steps to evaluate the technician staff. This is presently used throughout our Technical Operations department giving the necessary insight to the managers overseeing the technicians.

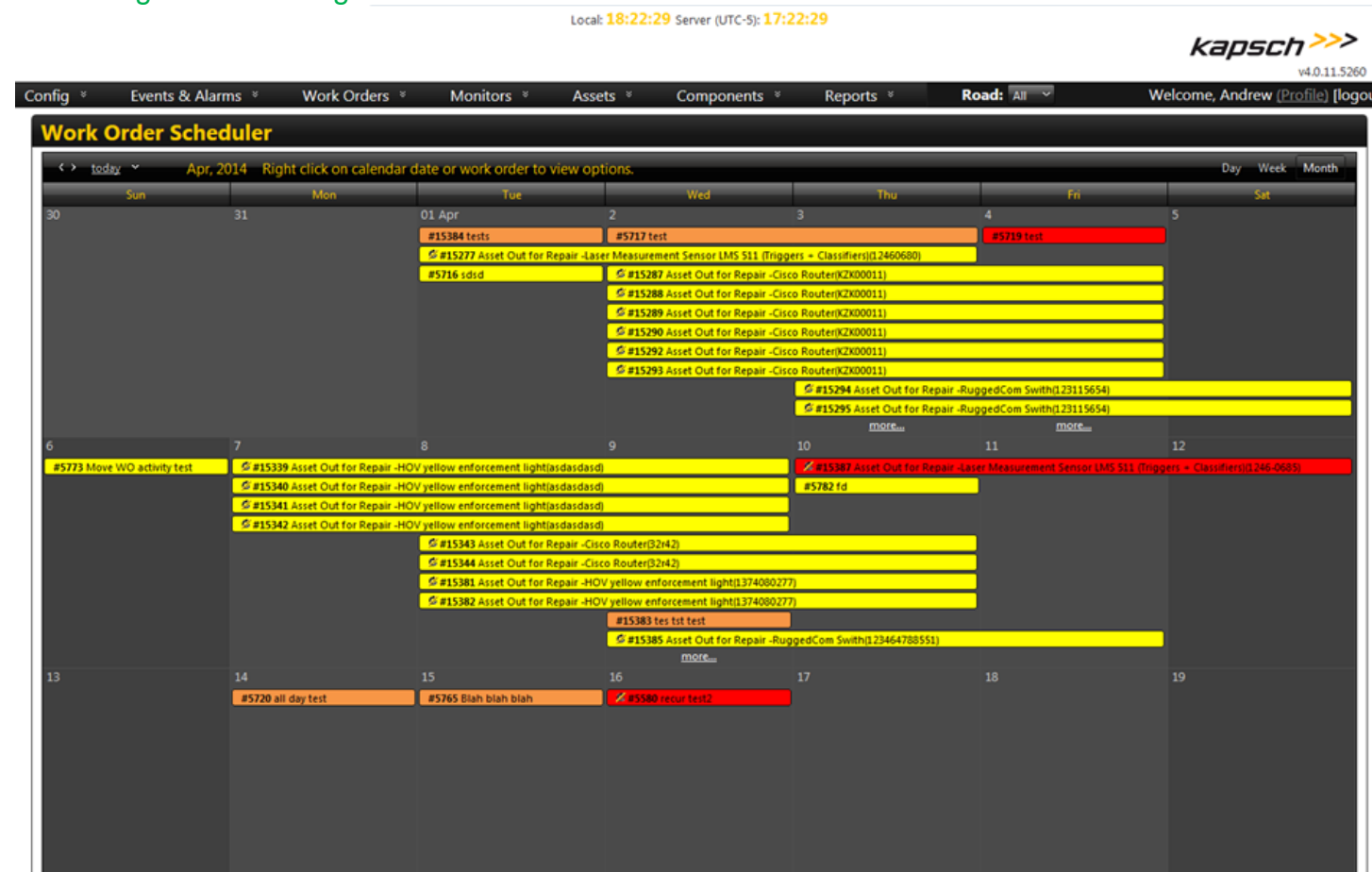


Figure 5-11 Kapsch MOMS Work Order Scheduler Screen

TO-05

The MOMS shall monitor activities, provide alerts and generate tickets in real-time for all processes and unusual activity triggered by the System and System operators, including but not limited to: communication, Hardware, Software, and database failures.

X

Proposer Response:

Kapsch fully complies with requirement TO-05 , and this compliance is described below:

**Real Time Monitors**

The MOMS provides a number of monitors, besides the previously mentioned Event Monitor, Alarm Monitor, and Work Order Monitor, which continuously watch the overall health of the system and the traffic and transaction activity collected by the system. These monitors are:

Req ID

Toll Operations Center (Section TO)

Required

Value Add

- System Status Monitor
- Transaction Monitor

**System Status Monitor**

System status monitoring will give a graphical view of the northbound and southbound plazas supported by the system, displaying icons that indicate if all components are working normally or if there is a problem with one or more components. When the System Status Monitor is executed from the MOMS user interface menu, a map of the system's plazas will be displayed. When an error occurs at a plaza, depending on the severity, it can be indicated on the System Status Monitor map, an example of which is shown below. The user can click on the icon to see the component(s) that may be impacting the performance of the plaza.

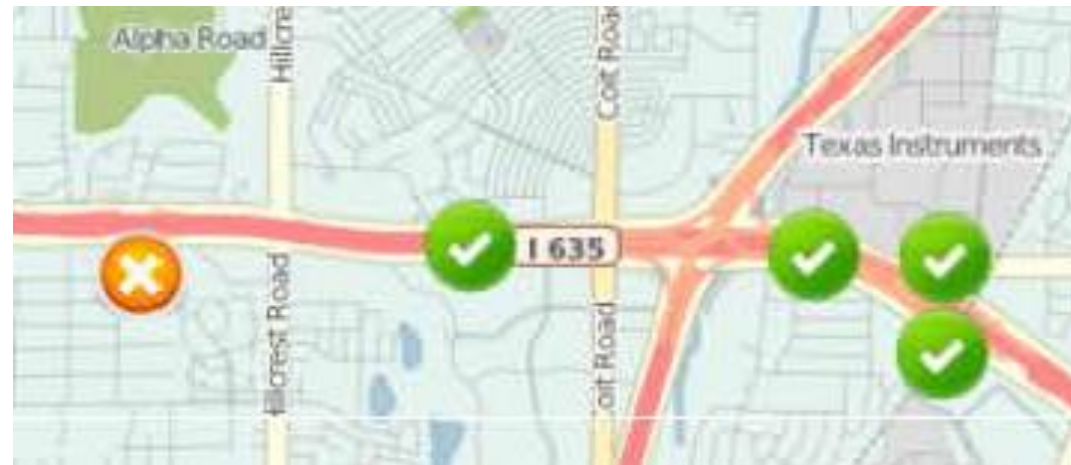


Figure 5-12 Sample System Status Monitor

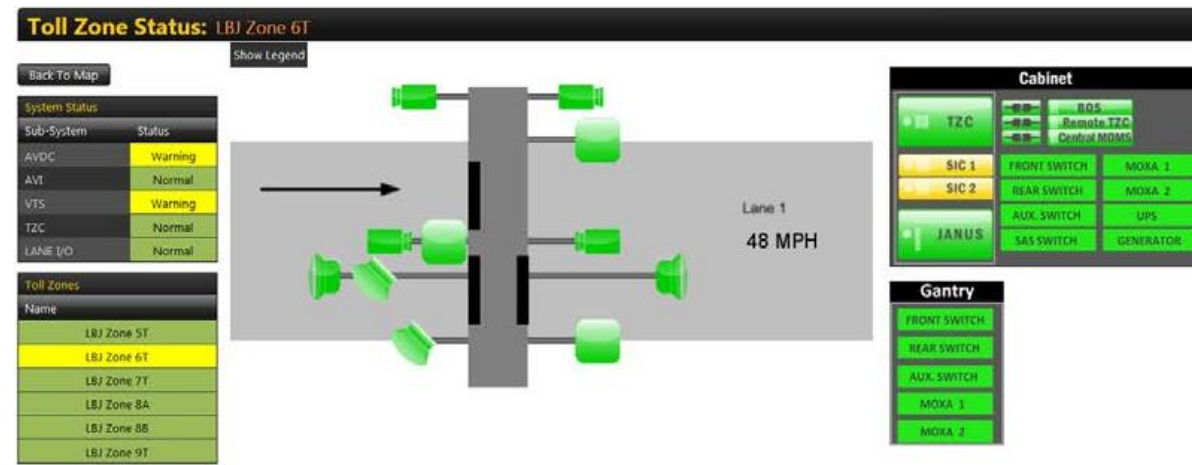


Figure 5-13 Sample Toll Zone Status Screen

The user can click on a component to view the component status window to see what Alarms and Work Orders have been opened to address the issue.

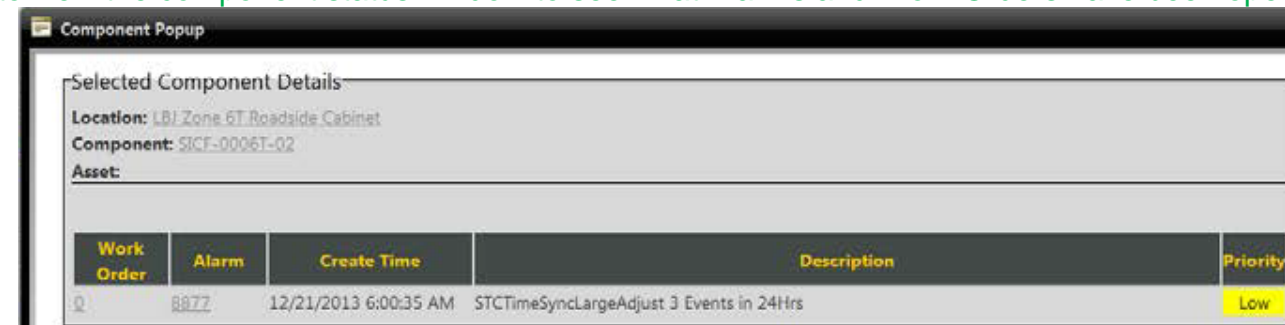
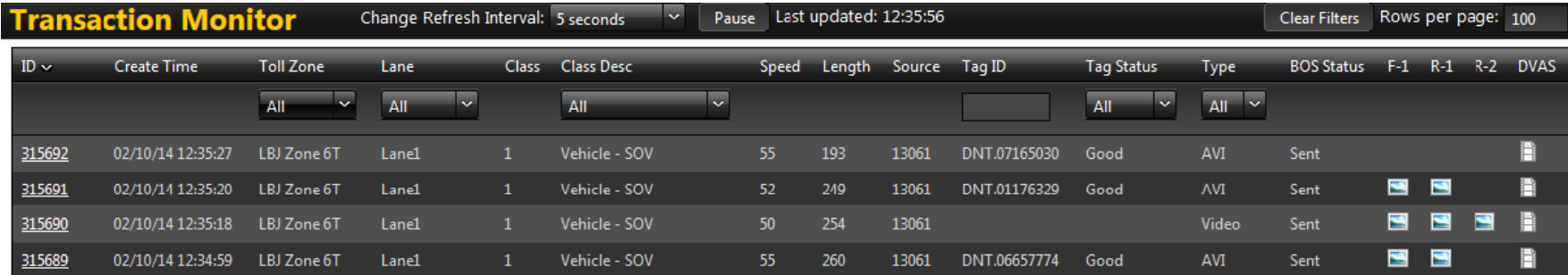


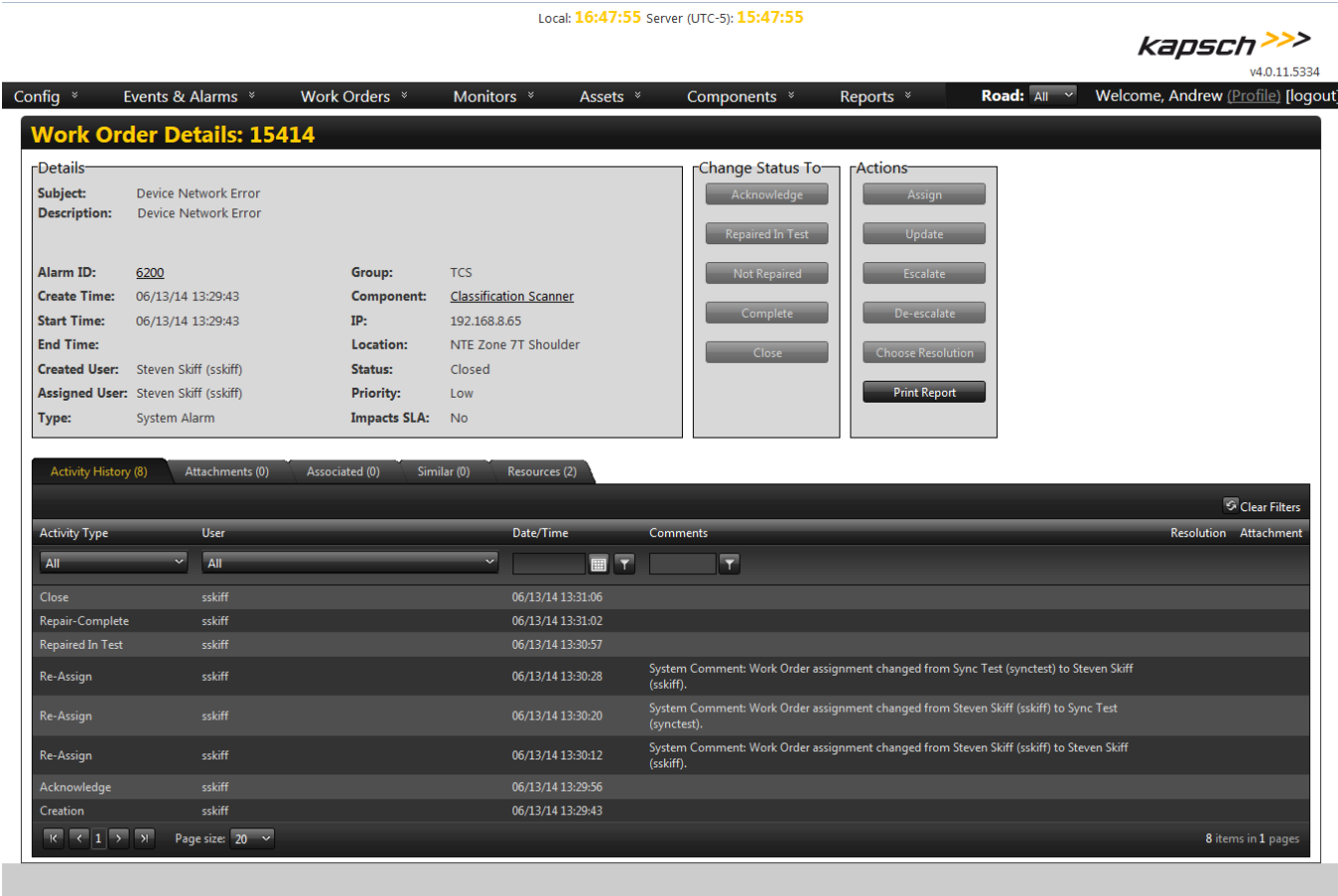
Figure 5-14 Component Status

Further drill down capability is provided to view the details of the Location, Component, Work Order, and/or Alarm.

**Transaction Monitor, Search, and Details**

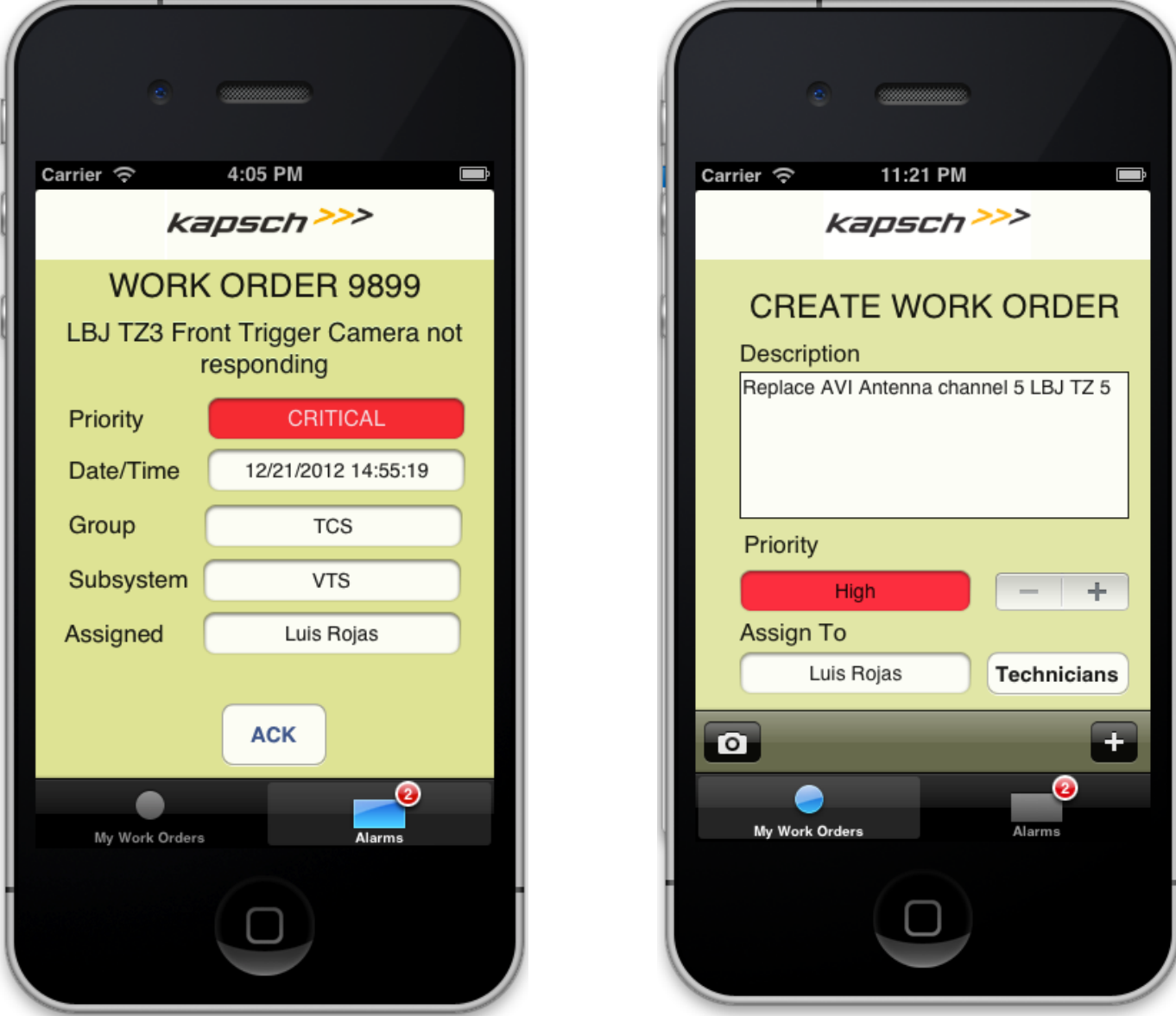
The Transaction Monitor, a sampling of which is shown below, captures the vehicle transactions shortly after their occurrence. All vital details of the transaction are displayed in the monitor which includes links to the:

Req ID	Toll Operations Center (Section TO)	Required	Value Add
	<ul style="list-style-type: none"> <li>transaction details</li> <li>license plate images for the transaction</li> <li>a segment of the DVAS video associated with that transaction.</li> </ul>  <p style="text-align: center;">Figure 5-15 Sample Transaction Monitor</p> <p>The Transaction Search capability provides the ability to locate and retrieve past transactions of interest, displaying the same information as the Transaction Monitor. Clicking on the transaction ID from either the Transaction Monitor or Transaction Search results displays the Transaction Details screen, which includes the front and rear license plate images. Clicking on the DVAS icon displays the DVAS Playback System which provides a 15 second segment of the DVAS video associated with the vehicle transaction.</p>		
TO-06	<p>The MOMS shall provide monitors and alerts, and shall calculate and generate tickets in real-time for all processes, including but not limited to: high number of image rejects in a lane, high number of Violations or image Traffic Transactions in a lane; threshold limits exceeded (e.g. Violations, class mismatch); and response times, repair times, and down time from the data entered by the maintenance staff and automatically generated by the TCS.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TO-06 , and this compliance is described below:</p> <p>The Kapsch MOMS tool is designed to monitor many aspects of the overall health of a system, from connectivity to individual equipment failures. As part of this wide range of monitoring applications, certain preventative maintenance thresholds are created for certain calculable scenarios. Over the operations of the system, these thresholds can be determined and configured for the real-world scenarios present on the toll system as a whole. Our system is designed to use the health status feeds from hardware, via SNMP or other means, and to also monitor certain data outputs from software and databases. The system creates events for certain actions that have occurred, such as no transactions, image rejection, violations, image-only Traffic Transactions, etc. As these events are created, the system has built-in tools and settings to monitor the volume of events out of the system. If the volume levels are too high, based on pre-determined limits set by the Joint Board, an alert is created notifying the technical operations team.</p> <p>Maintenance staff is continually monitored for meeting the response, repair and down times per the contract. Our MOMS has this solution built into the maintenance staff scheduling and dispatching. As part of the monthly KPI reports, the Joint Board will get the formal report stating our Response and Repair Mean Times.</p> <p>Throughout the month, the maintenance staff shall be monitoring their own performance and optimizing the response and repair times. This continual improvement program, similar to our program implemented in Dallas, TX, will increase the overall uptime and performance of the LSIORB project. Our goal as an organization is zero down-time, and we continually strive to reach that metric.</p>		
TO-07	<p>The Toll System Provider shall provide a MOMS that includes but is not limited to receiving and monitoring status messages of all System Hardware and Software and providing local trouble ticket manual entry or email entry by authorized users. The MOMS shall store data in a relational database to permit data recovery and flexibility in reporting via Ad-hoc reporting.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TO-07 , and this compliance is described below:</p> <p>As stated above in TO-05, the MOMS system is capable of receiving and monitoring status messages from all Software and Hardware used in the system. These status messages are sent automatically into the system and manual entry is available via the GUI or e-mail entry by authorized users of the system. E-mails sent to</p>		

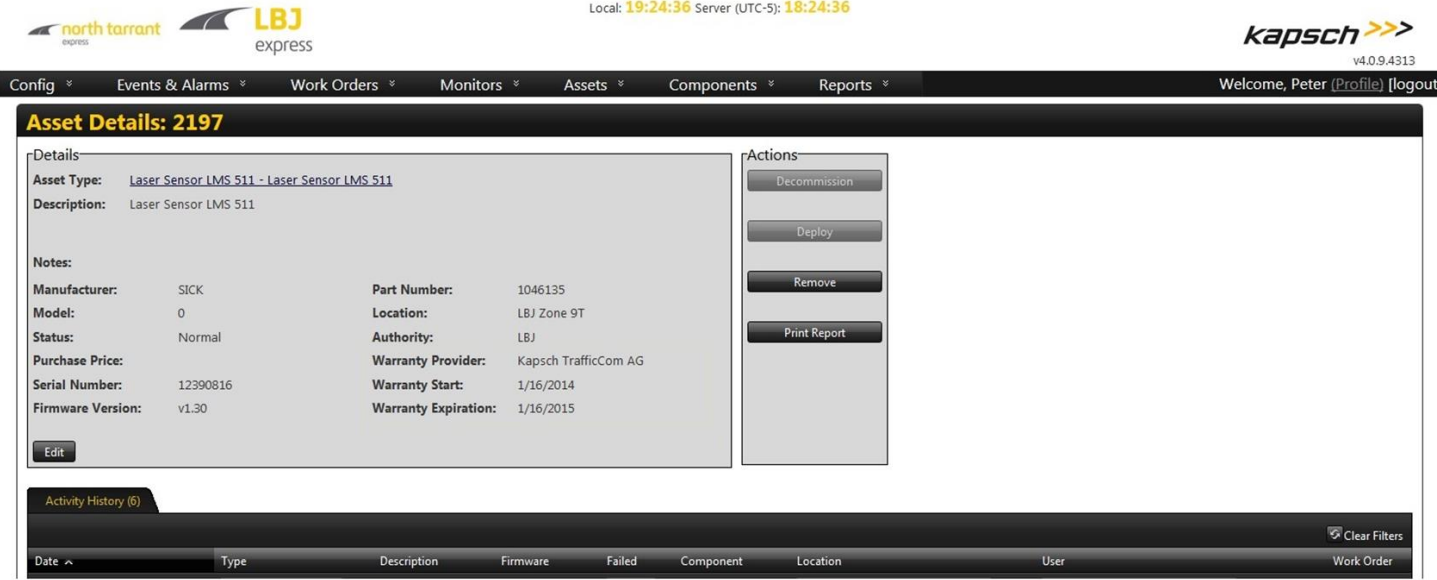
Req ID	Toll Operations Center (Section TO)	Required	Value Add
	the system by non-authorized e-mail accounts will be ignored and not added to the status message queue.		
TO-08	The Toll System Provider shall report and log all maintenance activities into the MOMS. The Toll System Provider shall document all information and issues related to a failure condition including all actions taken to complete the correction into the MOMS.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement TO-08 , and this compliance is described below:  As part of the Work Orders created in the MOMS tool, a full activity log is documented on all steps which the Work Order was Created and ultimately Closed. The Work Order contains full traceability of all the Alarms and Events logs which occurred that caused the Work Order's creation. The personnel assigned to the Work Order is documented, their acknowledgement, and updates. All Work Order details are retained throughout the life of the project. As shown above in Section TO-04 and TS-05, the details on the alarms and events are documented for all components and monitored data out of the system.</p>  <p style="text-align: center;">Figure 5-16 Work Order Details Screen</p> <p>This solution is presently used in the LBJ and NTE system operations and maintenance.</p>		
TO-09	The Toll System Provider's maintenance staff shall have real-time access to the MOMS, and the Toll System Provider shall establish and maintain all the required connections to ensure that the maintenance staff has remote access. Maintenance staff shall be trained in the use of the MOMS.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement TO-09 , and this compliance is described below:  The MOMS is a real-time accessible service which will allow maintenance staff, regardless of their location, instantaneous access into the health and status of all</p>		



Req ID	Toll Operations Center (Section TO)	Required	Value Add
	monitored components. All maintenance staff will be fully trained on the use of the MOMS. This is fully consistent with Kapsch practices already in place for the LBJ expressway in the Dallas area.		
TO-010	The Toll System Provider shall enter and update in MOMS all incidents within 4 hours of the incident. All updates shall be reported by the MOMS.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TO-10 , and this compliance is described below:  The MOMS automatically records all events and alarms generated automatically, in real-time, from the system and components. Any incident which requires manual entry will be inputted into the system within four (4) hours of the incident. This is fully consistent with Kapsch operational experience at the LBJ expressway in the Dallas area.</p>		
TO-011	It is desired the Toll System Provider provide a MOMS that accepts trouble tickets using mobile applications that can be used by technicians to enter information.		X
	<p>Proposer Response:</p> <p><b><i>Kapsch implements Value-Add TO-011, and this compliance is described below:</i></b>  Kapsch shall incorporate a mobile Maintenance Online Management System application (Mobile Field) to enhance the diagnostic, dispatch, response and repair process ensuring the read points stay up and running while keeping maintenance downtime to a minimum.</p>		

Req ID	Toll Operations Center (Section TO)	Required	Value Add
			
TO-012	The MOMS shall record all configuration data, and log and retain that data in configuration control after each System component change, including deployment of system patches, backup, archival, data restoration, disaster recovery data transfer and synchronization.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TO-011 , and this compliance is described below:  The MOMS records all present and past configuration information for each component. The MOMS database maintains an iterative log of each change which occurs in the system for the life of the project. This is fully consistent with Kapsch operational experience at the LBJ expressway in the Dallas area.</p>		
TO-013	MOMS shall calculate response times, repair times, and down time from the data entered by the maintenance staff and automatically generated by the System and shall provide role-based security.	X	
	Proposer Response:		

Req ID	Toll Operations Center (Section TO)	Required	Value Add
	<p>Kapsch fully complies with requirement TO-013 , and this compliance is described below:  All system corrective maintenance work orders are tracked for response time and repair time. This data is used to generate maintenance performance data including Mean Time to Respond (MTTR) and Mean Time to Repair (MTTR) for the system. Inventory entries are used to update Mean Time Between Failures (MTBF) data. System availability calculations are made based on system alarm data and work order status updates. Only specific maintenance staff can report down-time and repairs, via permissions within the system, to avoid improper identification of errors within the system. This is fully consistent with Kapsch operational experience at the LBJ expressway in the Dallas area.</p>		
TO-014	<p>All preventive maintenance shall be scheduled through the MOMS and automatic work orders shall be generated at the scheduled times.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement TO-014 , and this compliance is described below:  A Staff scheduling module is present within MOMS and allows the time scheduling, entry, and management of all technical staff. The overall reporting engine is capable of running reports from this module, enabling comparison of scheduled work hours to actual work hours worked. This comparison allows us to maximize efficiency, detect work load trends and is one of the steps to evaluate the technician staff. This is presently used throughout our Technical Operations department giving the necessary insight to the managers overseeing the technicians.</p>		
TO-015	<p>The MOMS system shall track all system Hardware and Software elements from purchase to their disposal. These include but are not limited to: 1) All system Hardware and Software items, locations and versions; 2) All maintenance and service agreements; 3) A list of suppliers from whom products were procured, original purchase order numbers, Supplier numbers and reference numbers; 4) All warranty information for the individual item; 5) Alerts prior to warranty expiration; and 6) Automatic alerts for Spare Parts levels.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement TO-015 , and this compliance is described below:  The MOMS system, as part of the asset inventory modules, tracks the hardware and software elements used in the system. The equipment and software tracked includes but is not limited to:</p> <ul style="list-style-type: none"> <li>• Roadside Equipment</li> <li>• Toll Zone Gantry Equipment</li> <li>• Toll Zone Cabinet Equipment</li> <li>• Walk-Up Center Equipment</li> <li>• Desktops</li> <li>• Printers</li> <li>• Etc.</li> <li>• Back Office Application Servers</li> <li>• Database Servers</li> </ul> <p>Upon initial deployment, all Hardware and Software items will be loaded with their location and version number (manual entry is enabled for items which cannot send automatic information on version number). The MOMS is capable of hosting the maintenance and service agreement information for each of the items. As shown below, all asset information such as manufacturer, supplier, order numbers, reference numbers, and warranty information is displayed for each of the asset items.</p>		

Req ID	Toll Operations Center (Section TO)	Required	Value Add
	 <p style="text-align: center;">Figure 5-17 Kapsch MOMS Asset Details</p> <p>The MOMS will be configured to send out an alert at a pre-configured time before the warranty expiration. This alert will go to the Maintenance Manager for actions on the specific item. A spare parts inventory status will also send out an alert when items reach their spare parts quantity threshold, which is configurable for each type of item in the system.</p>		
TO-016	<p>The MOMS shall automatically generate reports demonstrating performance, exceptions, availability, and compliance to Performance Requirements (if applicable) for the System and all of its components such as the IVR and Customer Website. MOMS daily, weekly and monthly reports shall be available on-demand.</p>	X	
	<p>Note: The TSP shall provide a list of reports available in the system in its Technical Proposal Response.</p> <p>Proposer Response:  Kapsch fully complies with requirement TO-016 , and this compliance is described below:  The MOMS software tracks all events and alarms produced by the system. This tracking allows us to create reports which verify the availability and performance of any given subsystem over a configured period of time. Typical reports will include KPI information on uptime of the toll collection system and its individual subsystems on a toll zone by toll zone basis and holistically. In addition, the KPIs for IVR and Customer Website are tracked for uptime and accessibility. Other system tracking will include KPI on automated OCR results, toll zone controller availability, communication links between Roadside and BOS, and many other subsystems of the overall Toll Collection System. A full list of reports is listed in Section TO-019.</p>		
TO-017	<p>Toll System Provider shall include the Maintenance and Support Plan for the Joint Board’s approval that demonstrates serviceability of components and the overall system, with attention to how performance metrics will be tracked and reported to the Joint Board. The Maintenance and Support Plan shall illustrate how the proposed structure and position of equipment provides optimum ease of service and maintenance during lane closures, and ease of access during regular maintenance.</p>	X	
	<p>Note: The Proposer shall include in this Technical Response Form detailed descriptions of how it will service the System components, including but not limited to 1) camera cleaning and lighting replacement; 2) remote and on-site equipment calibration and tuning; 4) Hardware replacement during live operations; and 4) remote Software upgrades and maintenance including patch management.</p> <p>Proposer Response:</p>		

Req ID	Toll Operations Center (Section TO)	Required	Value Add
	<p>Kapsch fully complies with requirement TO-017 , and this compliance is described below:  Kapsch will prepare the Maintenance and Support plan based on our existing maintenance plans for the systems we've deployed previously. The Maintenance and Support Plan will go through the Joint Board approval process and fully demonstrate the serviceability and monitoring of the entire toll collection system. Specifically to the requested information for this response, the following topics address the serviceability of both hardware and software within the system:  Kapsch cameras and illumination devices are installed in over 15,000 lanes throughout the world. Our maintenance procedures for equipment are well documented and best practices have been refined over years of maintenance of this subsystem. The cameras are installed using quick release brackets which require no tools. The cameras also have quick connector fittings for all cables rated to MIL-C-26482 spec. These two aspects combined allow maintenance of the cameras and illuminators to occur rapidly and efficiently by replacing the unit in the least amount of time possible which is the priority for corrective maintenance on these devices. Using mounts which require no additional fine-tuning on unit replacement allow cameras and illuminators to be removed and installed in very little time without the need for tools. For preventative maintenance aspects on the cameras and illumination devices, Kapsch recommends a visual check of the devices, along with cleaning of the VR-X cameras and illumination units at maximum intervals of three months, but at the latest when the image quality is impacted by soiling.  The Kapsch roadside system has many features which allow for remote and on-site calibration of equipment. Each of the subsystems has dedicated configuration GUIs, either browser-based or native applications. The cameras have on-board diagnostics to evaluate the image quality and exposure and report on degradation of performance to the MOMS. The LVDC system also has the ability to be tuned remotely through the laser measurement sensor configuration tool. The Kapsch ETC Reader (provided through separate procurement contract) is highly configurable via its browser-based GUI.  As described in point 1 above, Kapsch equipment is specifically designed to be serviceable during live operations. This is achieved via a set of modular line replaceable units and active-active redundancy. Our maintenance approach is to replace the effected device with a known functioning device as quickly as possible. This allows the system to return to full performance operations in the shortest time possible. The redundancy built into our solution allows the overall system performance to remain at appropriate levels even during individual component failures.  Remote software updates are performed during off-peak traffic volume periods. Redundancy features of the system are utilized to upgrade the primary half of the equipment while the secondary half serves as the active unit. Roll-back features are built-in to the devices to mitigate against unforeseen deployment issues. Remote configuration and software updates occur through a formal update process scheduled and coordinated with approval from the Joint Board. The MOMS maintains version history of the components monitored, and all updates and software changes are reflected in the MOMS database.  Kapsch's Roadside subsystems shall have dedicated configuration GUIs (either browser-based or native applications). The TCS utilized by Kapsch shall have diagnostics to evaluate the image quality and exposure and report on degradation of performance to the MOMS. Kapsch's laser vehicle detection classification system shall have the ability to be tuned remotely through the laser measurement sensor configuration tool.</p>		
TO-018	<p>Toll System Provider shall provide monitoring services with a secure web-based real time monitoring system to monitor and report the status of all System components.</p>	X	
	<p>Note: The Proposer shall clearly provide in this Technical Response Form examples of how its existing MOMS system detects changes and anomalies and how this information is reported from the TCS.</p> <p>Proposer Response:  Kapsch fully complies with requirement TO-018 , and this compliance is described below:  MOMS data is collected from every device in the system including all lane, TZC, Facility Host, and BO systems. The Kapsch system supports Simple Network Management Protocol (SNMP) for all maintenance traffic including application level monitoring. This permits the connection of any standard device to the Kapsch MOMS.  Events  The MOMS receives events and creates alarms from various sources. Event sources include:</p> <ul style="list-style-type: none"> <li>• SNMP Traps</li> <li>• SNMP Polls (guaranteed response knowledge)</li> <li>• Hardware or software polling</li> </ul>		

Req ID	Toll Operations Center (Section TO)	Required	Value Add
	<ul style="list-style-type: none"> <li>• Custom interfaces including socket, web service or database</li> </ul> <p>Alarm Capability and Work Order Generation</p> <p>The MOMS receives events from various sources that include:</p> <ul style="list-style-type: none"> <li>• SNMP Traps</li> <li>• SNMP Polls (guaranteed response knowledge)</li> <li>• Hardware or software polling</li> <li>• Custom interfaces including socket, web service or database</li> </ul> <p>The MOMS utilizes SNMP for all system events including Kapsch software components. This allows the integration of any standard device into the MOMS including network devices, Uninterruptible Power Supplies (UPS), servers, etc. Custom interfaces are supported via database interfaces, network pings, web services, and socket connections to facilitate the support of any device or third party system.</p> <p>The MOMS monitors the above mentioned event sources to collect system traps and events for analysis and action and stores the data directly in the Oracle database. The event record is displayed on the Real Time Event Monitor and is available to be processed by the MOMS for alarm generation and for reporting and searching.</p> <p>The MOMS system provides an alarm configuration capability so the event data captured by the system can be carried forward as an alarm. The alarm configuration function enables an authorized user to:</p> <ul style="list-style-type: none"> <li>• Set up an alarm to also generate a work order</li> <li>• Specify a rule, or set of rules, under which an alarm is generated based on any combination of:</li> <li>• Event code</li> <li>• Timing values</li> <li>• Repeat values</li> </ul> <p>and, optionally, identify an event code that will automatically reset the alarm</p> <ul style="list-style-type: none"> <li>• Define the circumstances in which Notifications (by e-mail, SMS, or both) are to occur</li> <li>• Define the circumstances in which Escalations are to occur</li> <li>• Specify trouble-shooting Resources that may be of help in resolving the alarm condition</li> </ul> <p>An alarm is generated when an event, or set of events, occurs that meets the alarm rule criteria for that alarm type. The simplest example would be an SNMP trap where a single event occurrence causes the generation of an alarm. An alarm record is created that is displayed on the Real Time Alarm Monitor and the appropriate actions, notifications, and escalations occur according to the alarm configuration settings. See the event – alarm - work order flow in the diagram below:</p>		

Req ID	Toll Operations Center (Section TO)	Required	Value Add
--------	-------------------------------------	----------	-----------

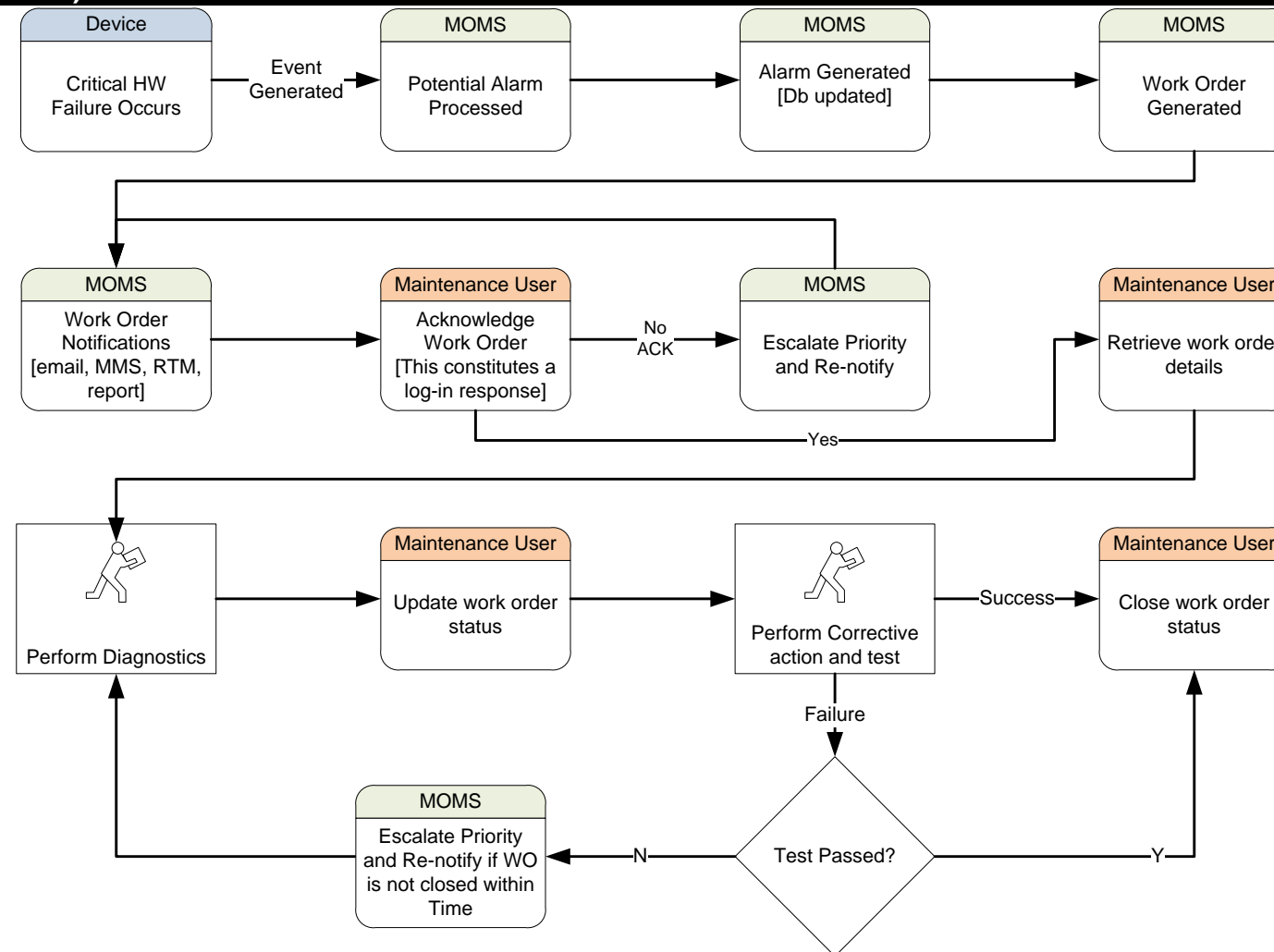


Figure 5-18 Overall MOMS Work Order Action Process

TO-019	The TCS shall provide reports that provide trouble ticket detailed and summary status for Hardware and Software processes for the TCS and any external or internal interfaces.	X	
--------	--	---	--

	<p>Note: The Proposer shall provide in this Technical Response Form a list of its existing suite of standardized reports for MOMS along with a brief description of each one as to its purpose and how it is used for monitoring the health of the System and performance in the field.</p> <p>Proposer Response:  Kapsch fully complies with requirement TO-019 , and this compliance is described below:  Kapsch shall provide the reports listed as follows:</p>		
--	---	--	--

Req ID	Toll Operations Center (Section TO)	Required	Value Add																																										
	<p style="text-align: center;">Table 5-1 MOMS Alarm Report List</p> <table border="1"> <thead> <tr> <th>Report Name</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>Alarms Summary</td><td>Shows summary listing of alarms per the parameters selected</td></tr> <tr><td>Alarms Detail</td><td>Shows alarm detail data for the specified Alarm ID</td></tr> <tr><td>Alarm Notification and Response Times</td><td>Shows list of alarm notification related information</td></tr> <tr><td>Work Order summary</td><td>Shows listing of work orders per the specified parameter criteria</td></tr> <tr><td>Work order Status and Tracking</td><td>Shows detailed information about a Work order per the specified Work Order ID</td></tr> <tr><td>System availability</td><td>Shows current percentage of Total System Availability</td></tr> <tr><td>Sub-system availability</td><td>Shows current percentage of Sub-System Availability</td></tr> <tr><td>Equipment failure and correction</td><td>Shows information about component failure occurrences and corrective action</td></tr> <tr><td>MTBF</td><td>Shows MTBF for components per formula on target system</td></tr> <tr><td>MTTR</td><td>Shows MTTR for components per formula on target system</td></tr> <tr><td>Equipment repair history</td><td>Shows a log of repair actions taken on a particular component</td></tr> <tr><td>Equipment Inventory</td><td>Shows a master list of parts or components in the system</td></tr> <tr><td>Equipment Use</td><td>Shows history of usage and location of a particular part or component ID</td></tr> <tr><td>Equipment Detail</td><td>Detail about a part or component</td></tr> <tr><td>Equipment Inventory Spare</td><td>Shows a list of spare parts inventory</td></tr> <tr><td>Equipment Warranty</td><td>List of parts with their warranty information</td></tr> <tr><td>Asset depreciation</td><td>Current value of part based of depreciation formula</td></tr> <tr><td>Assembly Summary</td><td>Shows components of an assembly (i.e. List all components in a Toll Zone)</td></tr> <tr><td>Software version numbers</td><td>Shows software version information of custom and 3rd Party software</td></tr> <tr><td>Vendor List</td><td>Shows list of all vendors configured into the system</td></tr> </tbody> </table> <p>Every component, process, and connection monitored is presentable in one of the reports above. Its status, health, and repair history is instantly retrievable from the standard reports above. This is our standard suite of reports utilized in the LBJ and NTE projects.</p>	Report Name	Description	Alarms Summary	Shows summary listing of alarms per the parameters selected	Alarms Detail	Shows alarm detail data for the specified Alarm ID	Alarm Notification and Response Times	Shows list of alarm notification related information	Work Order summary	Shows listing of work orders per the specified parameter criteria	Work order Status and Tracking	Shows detailed information about a Work order per the specified Work Order ID	System availability	Shows current percentage of Total System Availability	Sub-system availability	Shows current percentage of Sub-System Availability	Equipment failure and correction	Shows information about component failure occurrences and corrective action	MTBF	Shows MTBF for components per formula on target system	MTTR	Shows MTTR for components per formula on target system	Equipment repair history	Shows a log of repair actions taken on a particular component	Equipment Inventory	Shows a master list of parts or components in the system	Equipment Use	Shows history of usage and location of a particular part or component ID	Equipment Detail	Detail about a part or component	Equipment Inventory Spare	Shows a list of spare parts inventory	Equipment Warranty	List of parts with their warranty information	Asset depreciation	Current value of part based of depreciation formula	Assembly Summary	Shows components of an assembly (i.e. List all components in a Toll Zone)	Software version numbers	Shows software version information of custom and 3rd Party software	Vendor List	Shows list of all vendors configured into the system		
Report Name	Description																																												
Alarms Summary	Shows summary listing of alarms per the parameters selected																																												
Alarms Detail	Shows alarm detail data for the specified Alarm ID																																												
Alarm Notification and Response Times	Shows list of alarm notification related information																																												
Work Order summary	Shows listing of work orders per the specified parameter criteria																																												
Work order Status and Tracking	Shows detailed information about a Work order per the specified Work Order ID																																												
System availability	Shows current percentage of Total System Availability																																												
Sub-system availability	Shows current percentage of Sub-System Availability																																												
Equipment failure and correction	Shows information about component failure occurrences and corrective action																																												
MTBF	Shows MTBF for components per formula on target system																																												
MTTR	Shows MTTR for components per formula on target system																																												
Equipment repair history	Shows a log of repair actions taken on a particular component																																												
Equipment Inventory	Shows a master list of parts or components in the system																																												
Equipment Use	Shows history of usage and location of a particular part or component ID																																												
Equipment Detail	Detail about a part or component																																												
Equipment Inventory Spare	Shows a list of spare parts inventory																																												
Equipment Warranty	List of parts with their warranty information																																												
Asset depreciation	Current value of part based of depreciation formula																																												
Assembly Summary	Shows components of an assembly (i.e. List all components in a Toll Zone)																																												
Software version numbers	Shows software version information of custom and 3rd Party software																																												
Vendor List	Shows list of all vendors configured into the system																																												
TO-020	<p>It is desired the Toll System Provider provide to authorized users operational, management and performance MOMS reports (on-demand, ad-hoc, daily, monthly) that include but are not limited to:</p> <ul style="list-style-type: none"> <li>• Exceptions report summarizing all unusual or significant occurrences during the period and all items that are not processing correctly or are stuck in the System</li> <li>• Trend analysis for repetitive failure</li> <li>• Equipment versions, Software versions, firmware versions and serial numbers for all equipment installed as part of the TCS</li> <li>• Disaster recover data transfer and synchronization</li> <li>• Detailed list of parts replaced as a result of maintenance actions, with an identification of warranty versus non-warranty replacement</li> <li>• Status of spare parts inventory</li> <li>• Staffing report detailing positions, staff hours worked and performance; and</li> <li>• Other reports available to operate and maintain the system.</li> </ul>		X																																										
	<p>Proposer Response:  <b>Kapsch implements Value-Add TO-020, and this compliance is described below:</b>            In addition to the standard suite of available MOMS reports, the specific reports necessary for the Joint Board will be created. In every system, there are specific report needs which are unique to the authority overseeing the project. Kapsch will work with the Joint Board in the initial stages of the project to determine their specific reporting needs, and provide those reports as part of the operational system. A reporting workshop will be held between Kapsch and the Joint Board going over all the default reports coming out of the entire TCS system. The workshop will also go over the ad-hoc reporting capabilities and feature available to the Joint</p>																																												



Req ID	Toll Operations Center (Section TO)	Required	Value Add
	Board from their access into the reporting tools. Each authorized user will have permission to run all the reports necessary out of the system. In addition to the reports necessary in this requirement, additional reports are accounted for which are unknown at this time. Kapsch understands the dynamic needs of a tolling system under operations and will provide up to ten (10) additional reports, beyond the standard suite and the specific reports mentioned in the technical requirements document, at no additional costs to the project.		
TO-021	It is desired that the MOMS system monitor Software processes including but not limited to cron jobs, operating system services, application processes, database management metrics such as available memory in cache and other critical performance areas in the System.		X
	<p>Proposer Response:</p> <p><b>Kapsch implements Value-Add TO-021, and this compliance is described below:</b></p> <p>As stated above in Section TO-018, MOMS shall receive events and create alarms from various sources including:</p> <ul style="list-style-type: none"> <li>• SNMP Traps</li> <li>• SNMP Polls (guaranteed response knowledge)</li> <li>• Hardware or software polling</li> <li>• Custom interfaces including socket, web service or database</li> </ul> <p>MOMS shall monitor the crons jobs, operating system services, applications, database management, and other metrics as part of its ongoing automated monitoring processes. The goal is to use the proven built-in tools provided by the vendors of the hardware and software, and where appropriate utilize the custom built monitoring applications to monitor the specific non-SNMP based components and processes. This methodology is in present operations as part our LBJ and NTE maintenance activities.</p>		
TO-022	<p>The Toll System Provider shall provide storage space for all Spare Parts.</p> <p>The Toll System Provider shall be responsible for the inventory of all Spare Parts at a Toll System Provider-provided Warehouse Facility that is within 10 miles of one of the Walk-up Centers and co-located if feasible. The Toll System Provider shall provide a Warehouse Facility to store all Spare Parts and equipment and serve as the maintenance depot.</p> <p>The Toll System Provider shall account for all Spare Parts and shall provide safeguards against theft, damage, or loss of the Spare Parts. The Toll System Provider shall ensure that only Spare Parts and equipment required to service the Project are stored at the Warehouse Facility and that such stored Spare Parts and equipment shall only be used for the Project.</p>	X	
	<p>Note: The Joint Board shall have final approval of the location of the Warehouse Facility. The Toll System Provider shall obtain and maintain a lease for the necessary Warehouse Facility, subject to the Joint Board's approval.</p> <p>Proposer Response:</p> <p><b>Kapsch fully complies with requirement TO-022 , and this compliance is described below:</b></p> <p>Kapsch shall provide a secure, indoor storage site to house the spare parts inventory for the Roadside System. This storage site will be centrally located to maintain mean-time to respond and repair performance metrics. This storage facility will be co-located with the maintenance staff and maintenance facility. Kapsch is presently looking for potential sites which can co-locate one Walk-up Center with the Warehouse Facility.</p>		
TO-023	<p>The Toll System Provider shall maintain an adequate Spare Parts inventory as specified in the Agreement. The Toll System Provider shall identify the existing spares for the Roadside System and propose the quantity needed to maintain the required performance.</p> <p>The Toll System Provider shall make available all necessary test and warranty repair resources for replacement including test repair and warranty repair, spare modules and spare components to support availability of the TCS in accordance with the Performance Requirements. The Joint Board reserves the right to purchase any and all Hardware for the Project from the Supplier directly.</p> <p>The Toll System Provider shall recommend and periodically update a Spare Parts Inventory Plan identifying the quantity to be maintained in order to support the Project, its Roadside System, BOS, and CSC Revenue Service.</p>	X	
	<p>Proposer Response:</p> <p><b>Kapsch fully complies with requirement TO-023 , and this compliance is described below:</b></p>		

Req ID	Toll Operations Center (Section TO)	Required	Value Add
	<p>A careful analysis is required to determine the precise supply stock level that most contributes to the overall revenue producing capability of a toll collection system. Kapsch considers several factors when determining spare stock levels. In some instances the average number of items used over a given period of time is sufficient to help determine optimum stock levels. Other considerations include:</p> <ul style="list-style-type: none"> <li>• Criticality of the component to system availability.</li> <li>• MTBF</li> <li>• MTTR</li> <li>• Reorder lead-time</li> <li>• Repair turnaround time</li> <li>• Quantity purchase discounts</li> <li>• Cost of carrying the item in stock</li> <li>• PM requirements</li> <li>• Usage patterns</li> </ul> <p>Kapsch will develop a specific approach to calculating optimum supply levels as the deployed system continues to mature as part of its normal service life. Supply levels can be well defined only if the failure rates and repair characteristics of the specific equipment are known. MOMS is used to calculate and record these parameters.</p> <p>The spare parts/component inventory will be adjusted to stock levels to the most cost effective, and efficient levels. The maintenance force will keep all parts and components in a fully serviceable condition ready for immediate installation. All spares will be fully tested and stored in a serviceable condition to support rapid response time. MOMS will be used for inventory control and parts listing. Each part will be identified and cross-referenced by a unique coding system.</p>		
TO-024	<p>Spare Parts Inventory and Tracking:  The Toll System Provider shall monitor the inventory quantity and ensure that the inventory is maintained to the levels required in the Agreement. The Toll System Provider shall keep accurate records of all Spare Parts entering and leaving inventory including but not limited to: the time and date the Spare Part was dispensed, and the location within the Project to which the Spare Part was dispatched and used.  The Toll System Provider shall track of all warranty replacement through a returned materials authorization (RMA) process. If the replaced part is under warranty, the part shall be immediately replaced with a new part. If the replaced part is out of warranty, the Toll System Provider shall make every effort to repair the replaced item to a usable status and place the part back into the Spare Parts inventory.  If the part is unable to be repaired, a new part shall be purchased and placed into the Spare Parts inventory. The details of the repair efforts including problem, status, inventory, and repair disposition shall be included in the MOMS inventory and repair database.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement TO-024 , and this compliance is described below:  The Inventory system allows authorized users to search and view inventory based on part number, serial number, subsystem, and equipment type. Information in the Inventory system is linked to the work order system and tracks MTBF. Data tracked in the Inventory system includes:</p> <ul style="list-style-type: none"> <li>• Equipment Type</li> <li>• Equipment ID</li> <li>• Part Name &amp; #</li> <li>• Kapsch ID</li> <li>• Serial Number</li> <li>• Manufacturer</li> <li>• Vendor</li> <li>• Vendor Information</li> <li>• Vendor #2</li> <li>• Information</li> <li>• Warranty status</li> <li>• Spare level</li> <li>• Reorder level</li> <li>• Manual locations</li> <li>• Photos</li> <li>• GIS data</li> <li>• Equipment status</li> </ul> <p>Kapsch will incorporate the above requirements for spare parts inventory and tracking into it processes for LSIORB and will put them into effect at the onset of the</p>		

Req ID	Toll Operations Center (Section TO)	Required	Value Add
	Operations & Maintenance phase. Materials and warranty details in the price proposal are costed accordingly. These processes for LSIORB will take full advantage of Kapsch existing processes for warranty replacement and tracking for ETC equipment over its 20-year association with the E-ZPass Group.		
TO-025	<p>Procurement and Control of Spare Parts:  Thirty (30) days prior to the first Tolling Readiness Deadline, the Toll System Provider shall purchase and have on-hand the agreed upon inventory of Spare Parts. The facility and storage area shall be secured and connected to an up-to-date security network system with alarm notification provided to the Maintenance staff. The Joint Board shall have full and unrestricted access to the Maintenance and/or storage facility.  Any Spare Parts that are lost or damaged due to the negligence, intentional act, or omission of the Toll System Provider or its employees, subcontractors, agents, or invitees shall be replaced by the Toll System Provider at its sole cost. The Toll System Provider shall deliver all Spare Parts to the Warehouse Facility.  After the Warranty Period the Joint Board shall reserve the right to purchase all Spare Parts directly from the Supplier and all purchases will be coordinated through a process recommended by the Joint Board at that time. After the Warranty Period, the Toll System Provider-provided Spare Parts not purchased directly by the Joint Board shall be provided at cost, shall not include any mark up, and shall be in accordance with the prices as specified in the Agreement.</p>	X	
	<p>Proposer Response:</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>		
TO-026	The Toll System Provider shall provide Spare Parts adequate to support operations of the TCS and shall provide a sample inventory list of Spare Parts for the Project for its successful operation to ensure no degradation of service to the Project or customers.	X	
	<p>Note: The Proposer shall include in this Technical Response Form a list of all Major Spare Parts of the System that will be used to maintain the System. A sample list of the types of Major Spare Parts is listed below:</p> <p>Roadside System</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Image Camera and Illuminator</li> <li><input type="checkbox"/> Roadside Controller</li> <li><input type="checkbox"/> Inductive Loop array (AVC)</li> <li><input type="checkbox"/> Inductive loop controller(AVC)</li> <li><input type="checkbox"/> Overhead Laser Scanner</li> <li><input type="checkbox"/> CCTV Camera</li> </ul> <p>BOS and CSC</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Applications servers(list specific items)</li> <li><input type="checkbox"/> Web server (list specific items)</li> <li><input type="checkbox"/> Database servers( list specific items)</li> <li><input type="checkbox"/> Network Switches and Routers</li> <li><input type="checkbox"/> Link and Load Balancers (if application)</li> </ul> <p>Proposer Response:</p>		

Req ID	Toll Operations Center (Section TO)	Required	Value Add
	<div style="background-color: black; width: 100%; height: 100%;"></div>		

Operations and Maintenance Requirements

Req ID	Operations and Maintenance (Section OM)	Required	Value Add
--------	---	----------	-----------

OM-001	<p><b>Warranty</b></p> <p>The Roadside System Hardware and Software warranty shall be 1 year from the Revenue Service Date for each Bridge.</p>	X	
--------	---	---	--

Note: The Roadside System warranty start and end dates will have staggered start and end dates if the Revenue Service Dates differ for each Bridge.

**Proposer Response:**

Kapsch fully complies with requirement OM-001 , and this compliance is described below:

A warranty term of one (1) year is standard for Kapsch manufactured Hardware and Software components. As an experienced Systems Integrator and Equipment Manufacturer Kapsch has established a mature set of processes with tools to effectively and reliably manage and track warranty on large projects with staggered service commencement dates. Kapsch is using two tools for Warranty tracking which are both planned to be used for the LSI ORB project:

**The Kapsch MOMS System:**

Figure 6-1 Kapsch MOMS - Asset Details Sheet (example LBJ Project)

The Kapsch MOMS tracks all Hardware and Software in the Project Inventory list as an asset with its own asset detail sheet. The asset detail sheet lists the Warranty Provider as well as the start and end dates for the warranty specific to that part. The report function in MOMS allows the Kapsch maintenance team and the Joint Board to pull MOMS reports showing the Warranty status of all Hardware and Software utilized on the Project.

**The Project Warranty Support Database (PWSD)**

The PWSD is database query tool developed and specifically customized by Kapsch TrafficCom USA, Inc. (formally Transdyn Inc.) to manage the warranty of components and software supplied by a large number of different vendors on complex projects. Since the acquisition of Transdyn Inc. in January 2014, the Kapsch

Req ID	Operations and Maintenance (Section OM)	Required	Value Add
	<div style="background-color: black; width: 100%; height: 100%; min-height: 400px;"></div>		
OM-002	<p>The BOS and all associated interfaces Hardware and Software warranties shall be a minimum of 3 years from the commencement of Revenue Service for the first Toll Zone.</p>	X	
	<p>Note: For purposes of this requirement, the BOS shall include the account management system, transactions system, reporting system, MOMS, external systems provided and any systems required by the Toll Operations Center, and CSC and Walk-up Centers.</p> <p>Proposer Response:</p> <div style="background-color: black; width: 100%; height: 100%; min-height: 100px;"></div>		
OM-003	<p>The Toll System Provider shall provide all labor, parts and materials to keep the System performing in accordance to the Performance Requirements.</p>	X	

Proposer Response:

Kapsch fully complies with requirement OM-003 , and this compliance is described below:

Kapsch will put a complete maintenance organization in place that will include experienced experts for all major subsystems on the roadside and back office systems provided to the Joint Board by Kapsch.

The function organization of the Kapsch Maintenance Team will be as follows:

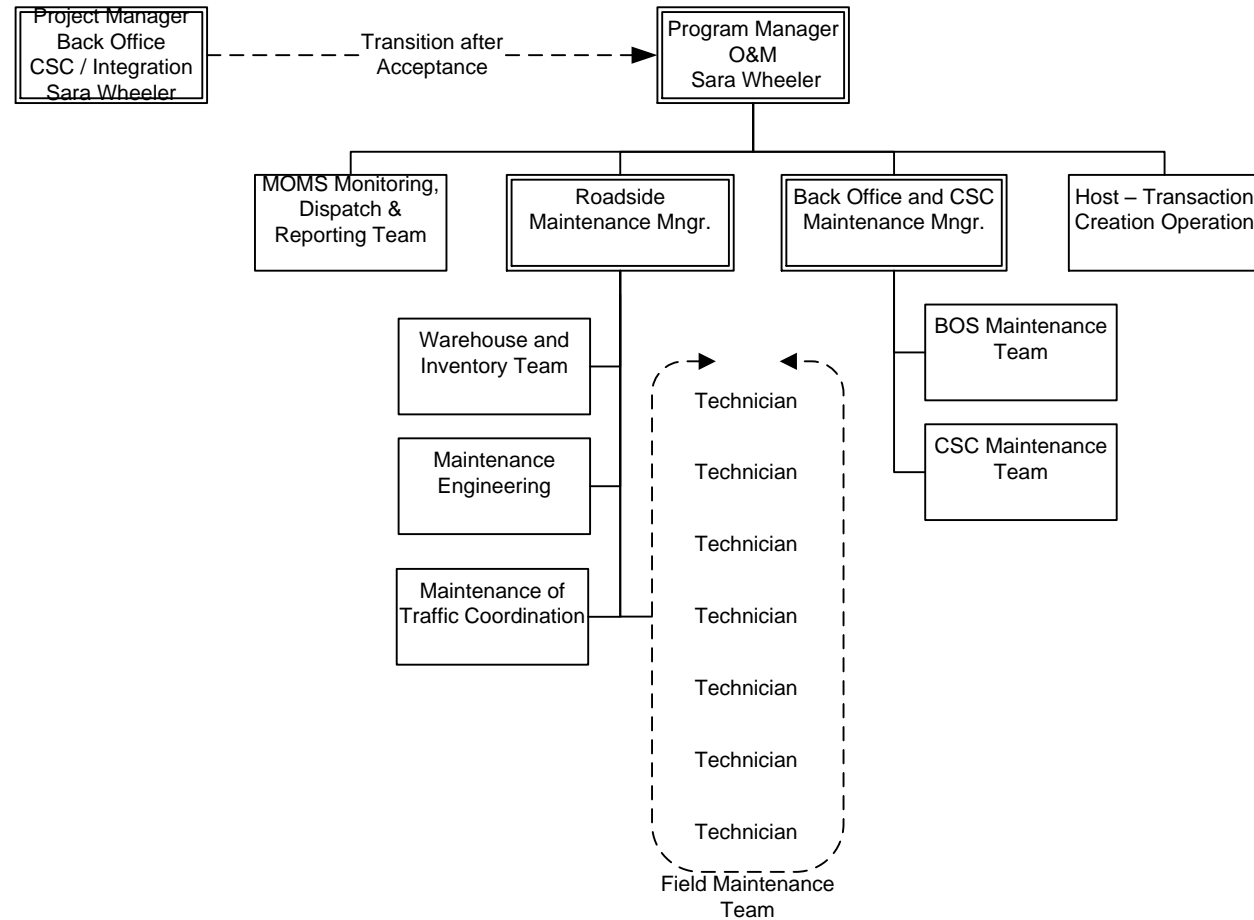


Figure 6-3 High Level Maintenance Organizational Chart

The overall responsibility for all maintenance and operational items in belongs to the O&M Program Manager. This role has been filled by Kapsch with Sara Wheeler, an experienced subject matter expert on maintenance and operations for Roadside and Back Office Systems in the Tolling Industry. In order to ensure consistency between the design and build phase of the LSI ORB project and the operation and maintenance phase, Ms. Wheeler will hold the position of BOS and CSC Integration Project Manager during the implementation of the System and she will also be responsible for the management of the integration of the roadside and back office systems. With the commencement of Toll Collection on the first Bridge, Ms. Wheeler will start to transition into her role and the O&M Program Manager, who has end-to-end responsibility of all maintenance activities for the entire system. The main benefit of this approach is that Ms. Wheeler will head maintenance activities with an in-depth knowledge of the system from the beginning of the project which makes ensures no loss of information and a seamless transition into the maintenance phase of the project. Ms. Wheeler will be located in Texas supporting the BOS Design and Implementation activities at Kapsch's partner MSB's facility and relocate to the Kapsch project office in Louisville during her transition into the O&M Program Manager role. However Ms. Wheeler will be available for meetings with the Joint Board in Louisville as required. Ms. Wheeler will be supported by the following core functions in the Maintenance Organizations:

- Roadside Maintenance Manager: Responsible for Level 1 and 2 Maintenance of all Hardware and Software deployed at the ORB as well as any HW defect at the Walk-Up Customer Service Centers in Kentucky and Indiana. The Roadside Maintenance Manager is in

charge of all field technicians as well as all MOT coordination and the Maintenance Systems Engineering support for higher level maintenance on the roadside system. The Roadside System Manager and associated team will all be located in the Kapsch Project Office in the Louisville Area close to the project sites.

- BOS and CSC Maintenance Manager: Responsible for all Hardware and Software related Maintenance for the Back Office System and Customer Service Center, with the exception of the Hardware located on the Walk-Up Centers, which will be maintained by the Roadside Maintenance Team. The BOS and CSC Maintenance Teams will be located at our facility in Austin supported by a team of software technicians. The team in Austin will closely work together with the O&M Program Manager in Louisville.
- MOMS Reporting, Dispatch and Reporting Team: Responsible for 24/7 monitoring the functionality and performance of all system elements on the roadside and BOS, the MOMS Team will be located at Kapsch's Technical Operations Center in Irving, Texas where Kapsch is also performing similar functions for the

LBJ and NTE Managed Lanes System using the same tools proposed here to the Joint Board. Kapsch will expand that existing team and dedicate full time resources to the LSI ORB system. This team will also be responsible to generate all required maintenance reports for the Joint Board and provide them to the O&M Program Manager as well as performing system performance analytics. By using the existing Kapsch MOMS team, the Joint Board benefits from a proven team armed with mature processes and procedures for the monitoring of the system, while ensuring proper attention to ORB thru added resources. In order to ensure full maintenance coverage for the LSI ORB System, the Kapsch team's maintenance activities will include:

**Planned Maintenance**

Planned maintenance activities are tasks that require periodic repetition, such as cleaning of enclosure air filters and camera lenses. Planned activities are typically not high priority items and service reminders are planned to provide notice to the maintenance team when the service interval is approaching. In this way, the planned maintenance activity can be scheduled when resources are going to be available or doing other work in the same part of the system. This plan will be developed by our experts and taught to Joint Board's staff at the time of transition. This plan will be scheduled and managed through the Kapsch MOMS.

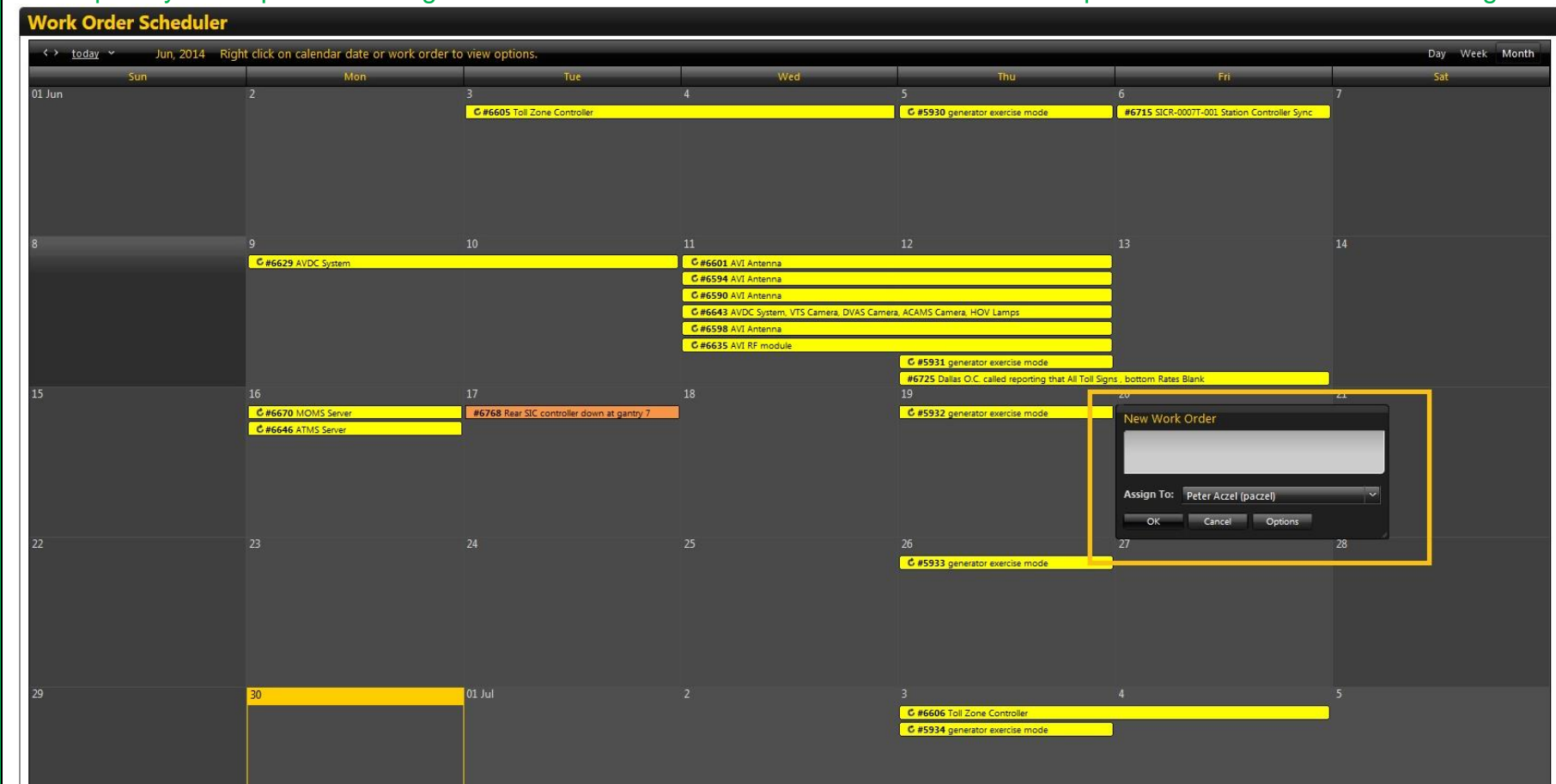


Figure 6-4 Kapsch MOMS Work Order Scheduler (example LBJ Project)

**Preventative Maintenance**

Preventative maintenance is pre-emptive and is structured to allow the maintenance team to review the operation of key elements of the system before a failure occurs, and to ensure that the functional environment is capable of supporting ongoing operation. The purpose of an effective preventative maintenance plan is to achieve the following goals:

- Preserve system functionally and performance



Req ID	Operations and Maintenance (Section OM)	Required	Value Add
	<ul style="list-style-type: none"> <li>Prevent unnecessary system repair</li> <li>Sustain the health of the system and safety of crew and motorists on highway</li> </ul> <p>Strategically planning out preventative maintenance requirements in the short and long term will allow Kapsch to meet these goals, and maintain a high-availability and high-performance system. The Kapsch MOMS system provides tools to develop preventative maintenance triggers based on performance measurements of specific equipment and subsystems.</p> <p><b>Emergency Maintenance</b>  Emergency Maintenance is unplanned and typically restorative maintenance that is required to correct any failures of the system, which may impact the life and safety of patrons/ employees or has caused an interruption in the revenue stream.  The purpose of an effective emergency maintenance plan is to achieve the following goals:</p> <ul style="list-style-type: none"> <li>Prevent and correct situations which impact the life and/or safety of patrons/employees</li> <li>Prevent interruptions in the revenue stream</li> <li>Prevent interruptions in the system availability which impact overall performance</li> </ul> <p>Prompt and efficient emergency and corrective maintenance is crucial in this system and an integral part of maintaining the performance requirements mandated per contractual obligations.</p> <p><b>Corrective Maintenance</b>  Corrective maintenance is maintenance required to bring the system back into conformance with requirements or to correct a deficiency in the system performance or availability. Corrective maintenance typically involves adjustments to operating equipment, replaying of transactions to resolve upload issues, and similar adjustments that can be made on a schedule basis to return the operation of the system to compliance.  The purpose of an effective corrective maintenance plan is to achieve the following goals:</p> <ul style="list-style-type: none"> <li>Correct issues from interruptions in the revenue stream</li> <li>Prevent interruptions in the system availability which impact overall performance</li> </ul> <p>Prompt and efficient corrective maintenance is crucial in this system and an integral part of maintaining the performance requirements mandated per contractual obligations. Dependent upon the Local Field Technician's finds, immediate repair will occur or escalation of the problem will flow to the specified maintenance group responsible.</p> <ul style="list-style-type: none"> <li>LEVEL 1: Field Level Maintenance Teams</li> <li>LEVEL 2: Individual Subsystem Maintenance Teams</li> <li>LEVEL 3: Individual Subsystem Engineering Teams</li> <li>LEVEL 4: Individual Subsystem Research and Development Teams</li> </ul> <p><b>Parts and Materials</b>  An inventory of spare parts will be established, monitored and maintained at the local Kapsch office by the Maintenance Manager. The spare parts inventory levels will be based on number of components in service, lead time to supply, component Mean-Time-Between Failure (MTBF) and Mean Time to Repair (MTTR) data to support required response and repair time. Each complex component will be identified and tracked within MOMS by serial number. Simple components, such as mounting hardware, spare cables and connectors will not be so identified.</p>		
OM-004	The TCS Software Warranty shall cover all defects and failures.	X	
	Proposer Response: Kapsch fully complies with requirement OM-004 , and this compliance is described below:		

Req ID	Operations and Maintenance (Section OM)	Required	Value Add
	Per Kapsch's standard Warranty Policy, the company will cover all software defects and failures as they relate to non-performance or non-compliance to the approved systems design for a minimum of three years. For warranty duration, specific to the BOS, please see Kapsch's response the requirement OM-002.		
OM-005	The Toll System Provider shall modify Software and configurations as necessary to maintain and support the TCS in the normal course of business. Toll System Provider shall provide any and all version changes, parameter changes and changes that improve the Toll System Provider's ability to maintain and support the TCS at no additional cost to the Joint Board.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement OM-005 , and this compliance is described below:</p> <p>Configuration management is a process used within Kapsch for its own use and implemented within project execution for systematically managing changes to services and systems. The process tracks all aspects of implementation and operation, ensuring that all is fully documented and stored.</p>		

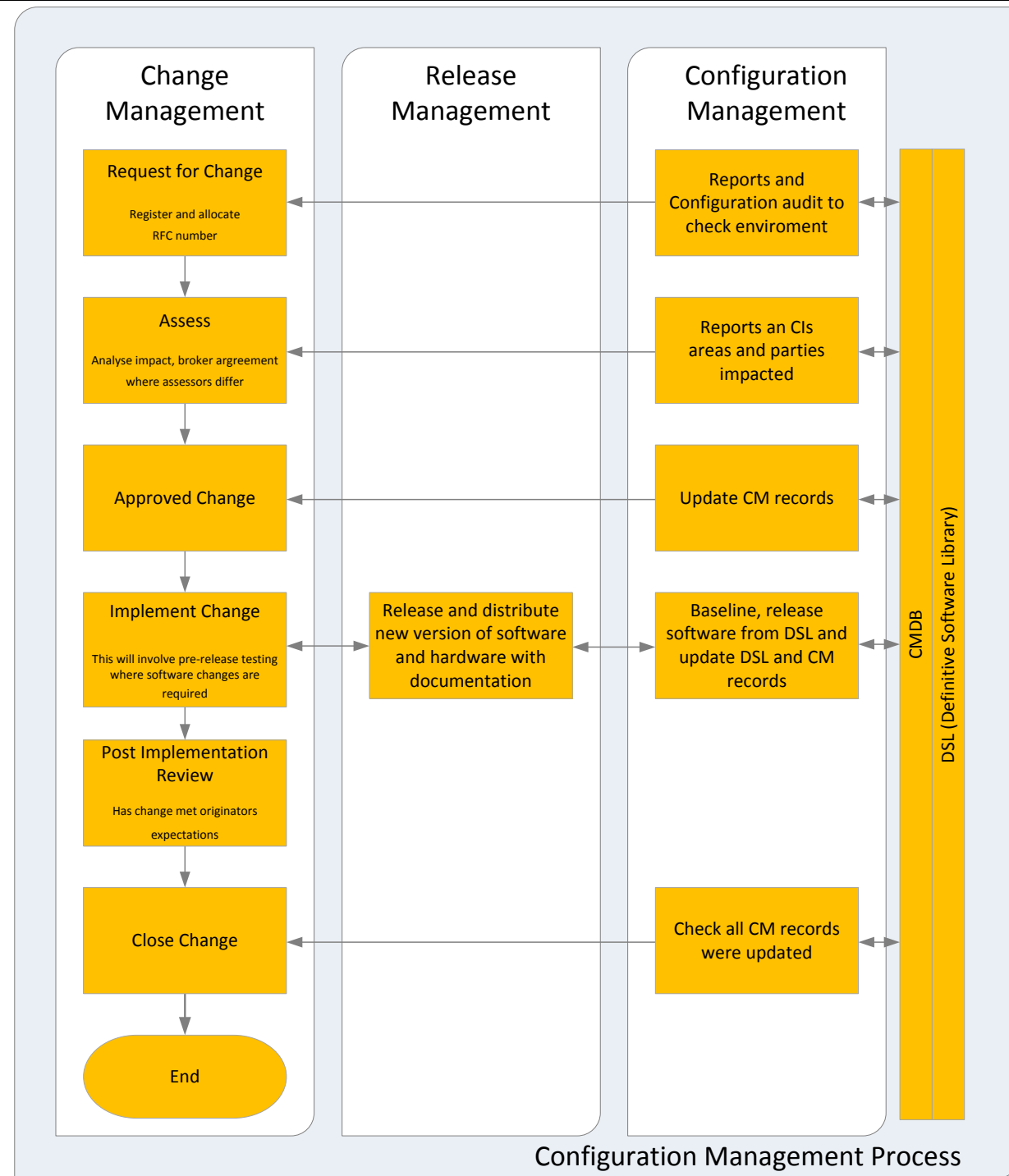


Figure 6-5 Change Management Process

**Configuration Release Management**

**Configuration Baseline**

A Configuration Baseline is the configuration of a product or system established at a specific point in time, which captures both the structure and details of a configuration. It serves as reference for further activities. An application or software baseline provides the ability to change or to rebuild a specific version at a later date. The Configuration Management system is able to save, protect and report on a configuration baseline, its contents and documentation.

Configuration Management activities include:

- Regular information and an ad-hoc reporting service
- Policy, procedures, roles and responsibilities for Configuration Management
- Reports that help to identify how to reduce the number of variant configurations and the complexity of the operational environments
- Efficient capture, maintenance and deletion of records
- Updated lists and information on standard products
- A library service to manage controlled copies of documents or software
- License management

**Development Baseline**

The Development Baseline begins with the completion of the project software requirement document and the completion of software design. The development baseline may be produced several times during the course of project development. This baseline may change during the course of project development and includes software and documentation defined or released at any point in the project. A development baseline may be frozen at specific times prior to achievement of project milestones.

**Testing Baseline**

The Test Baseline is an approved development baseline given to Test Engineering group for product testing and validation. The Test Baseline includes all Change Control Board approved, product related source code, test cases/scripts, and the project Test Plan.

**Production Baseline**

The Production Baseline is a baseline on which product testing and validation has been performed per the Quality Assurance Processes. The Production Baseline is the one that is used to release the product to the Production System.

Req ID	Operations and Maintenance (Section OM)	Required	Value Add
	<p>Configuration Release Management is based on three types of releases – major, minor and patch releases. Release naming convention determines the type of release and is a basis of release identification. Release identification is managed by the Configuration Management Team.</p> <ul style="list-style-type: none"> <li>Major Release</li> <li>A Major Release consists of the major functionality when released for the first time. The numbering scheme follows the major version scheme to reflect the major changes to the functionality.</li> <li>Minor Release</li> <li>A Minor Release includes the fixes, enhancements and other changes that are needed after the main functionality is released. The numbering scheme follows the minor version scheme to reflect the minor changes to the functionality.</li> <li>Patches</li> <li>A Patch Release includes the changes that are emergency releases to handle customer requests.</li> <li></li> </ul> <p><b>Release Notes</b> Release Notes provide details on the items that are released from development to QA and from QA to the production system. It provides details on the changes, issues fixed, features developed, and the steps to install the application changes.</p> <p><b>Configuration Change Management</b> Kapsch ensure that the service provided continues to achieve project requirements from Developer through the lifecycle of Kapsch’s involvement with the Project. All service changes and development is managed by the Configuration Management Team. The Change Management Process will be fully released and implemented and all parties concerned will be fully aware of the process and their involvement in change implementation. The process covers all aspects of the service from development, integration, testing and deployment of both software and hardware and operations. Risk management involves analyzing any change to be implemented, ensuring that issues are minimized, and detailing any mitigation plans. All changes are documented according to the documentation processes. Kapsch will continue to perform the requisite changes and updates to the system throughout the lifecycle of the project at no-charge to the Joint Board.</p>		
OM-006	All warranty information shall be tracked and notification of expiration sent out to distribution list approved by the Joint Board. The warranty provisions shall be tracked for Major Spare Parts and Components excluding consumables.	X	
	<p>Note: It is not necessary to track consumables.</p> <p>Proposer Response: Kapsch fully complies with requirement OM-006 , and this compliance is described below: As shown in the response to requirement OM-001 above, Kapsch will be using both the MOMS and the PWSD tools to manage and track the warranty start dates, durations and expirations for all parts of the toll system, including spare parts. The MOMS and reporting team will generate regular reports on a monthly basis on the warranty status of all components of the system. The O&amp;M Program Manager will include this warranty report in the monthly Project Management and Maintenance Reports and especially highlight all components whose warranty is set to expire in the next three months. This list will also be distributed to a distribution list pre-approved by the Joint Board. The MOMS system will generate an alert when a warranted component is approaching the end of the warranty period. These alerts can be sent to a configurable distribution list.</p>		
OM-007	The Toll System Provider shall maintain warranty records, review Software and Hardware discrepancies and make available patch management reports to demonstrate Software compliance with the warranty.	X	
	<p>Proposer Response: Kapsch fully complies with requirement OM-007 , and this compliance is described below: Updates to Warranty records in MOMS and PWSD will handled as work orders in MOMS to ensure proper tracking and reporting capability. The work order will include at a minimum the following information:</p>		

Req ID	Operations and Maintenance (Section OM)	Required	Value Add
	<ul style="list-style-type: none"> <li>• Type of Update</li> <li>• Reason for Update</li> <li>• Date and Time of Update</li> <li>• Update Owner</li> </ul> <p>The work order will be opened once a warranty modification is requested either by the Joint Board, the Kapsch Team or a third party supplier and only be closed after all warranty records were updated and a MOMS report showing the changes has been generated and shared with the Joint Board. In addition the Joint Board will have full access and visibility into the Kapsch MOMS as well as the capability to generate its own asset reports showing the warranty status of all components.</p>		
OM-008	<p>The Toll System Provider shall conduct a System Certification Audit at the start of the third full year after the Revenue Service Date of the last Bridge that will include a compliance audit of all Hardware and Software including operating systems, databases and applications that demonstrates that all Software and Hardware meets a configuration audit and test that demonstrates that the System complies with all Performance Requirements. Any variances shall be reported along with a corrective action plan.</p>	X	
	<p>Note: The Joint Board may conduct its own certification and audit at any time. TSP shall cooperate with and assist the Joint Board in any such audit.</p> <p>Proposer Response:  Kapsch fully complies with requirement OM-008 , and this compliance is described below:  Kapsch will perform a System Certification Audit per requirement OM-008 at the completion of the third full year after Revenue Service Commencement of the last bridge using a similar approach to the audit as for the System Acceptance Test. Kapsch will prepare a detailed plan for the audit establishing time frames, methodology, entry and success criteria, sample sizes, test cases and scenarios, etc.  Some key concepts for the System Certification Audit are:</p> <ul style="list-style-type: none"> <li>• Kapsch will perform the Audit on all live sites including the BOS, the CSC and the Walk Up Centers</li> <li>• For the Roadside System Kapsch will select a vehicle sample made up by pre-selected test vehicles of hired drivers and frequent travelers on that specific toll zone</li> <li>• Kapsch will define verification methodologies for each requirement separately (Figure 6-6 below) including the transactions needed to achieve a statistically significant sample size for that requirement. The sample size will be distributed across time of day, day of week and toll zone in order to generate a representative data set of the actual traffic on the bridges. This calculation will determine the overall duration of the audit.</li> <li>• After the sample sizes have been collected Kapsch will conduct a detailed manual review of all collected data in its existing review facility in Mississauga, Ontario where similar reviews are currently being conducted for the LBJ-NTE Managed Lanes Project, Chamapa-Lechería ETC Project and the SmartView 360 Commercial Vehicle Operations Projects.</li> <li>• Kapsch will assemble a detailed audit review and submit it to the Joint Board for Review and Approval. In addition with the report Kapsch will make all collected raw test data available to the Joint Board and Kapsch will schedule a review work shop where the report and the raw data are jointly verified by the Kapsch Team, the Joint Board and any agreed third party the Joint Board requests to add.</li> </ul>		

**Video Image Capture Functional Availability KPI –Audit**

**Objective**

To provide an audit method for the Kapsch Toll Collection System (TCS) for LBJ and NTE Managed Lane System (MLS) that validates compliance to Video Capture Capability Key Performance Indicator (KPI).

#	Function	Performance	Description	Condition of Validity	Measurement / Verification	B-2*
2	Functional Availability Requirement.	≥99.95%	Video Image Capture Capability	Except for disruptions outside of SI control.		No

**Required Information**

INFORMATION SUPPLIED BY KAPSCH:

- MOMS Reports
  - Alarm Summary Reports
  - Alarm Detail Reports
  - Event Summary Reports
  - Event Detail Reports

INFORMATION SUPPLIED BY DEVELOPER:

- None

**Methodology**

The following steps represent the basic methodology in the order of execution:

Data Preparation

Copy and archive a defined period of data from the TCS for all Toll Zones for offline processing

1. Exclude the following from the data sets:
  - a. Samples collected during periods where the lane was in maintenance mode.
  - b. Samples collected during periods when there was an incident located at or near the tolling point that effects traffic behavior and is outside of Kapsch's control.
  - c. Samples collected during force majeure events.

Data Analysis

1. SET A1: Total the number of seconds for the defined sample period minus any excluded periods for all samples as above.
2. SET A2: Total the number of seconds the VTS subsystem is reported as unavailable according to the MOMS alarms. The total number of seconds is calculated by using:
  - a. The total of all the periods between trigger and reset events that indicate the VTS system is unavailable.
    - i. For example, if a trigger event occurs at 00:00:00 and a reset event at 00:00:05 the total number of seconds is five (5).
  - b. Relevant alarms consist of:
    - i. Simultaneous loss of both LPR cameras (front AND rear) for a lane
    - ii. Loss of both front AND rear image capture controllers (or the machines hosting these controllers).
  - c. In the event of staggered losses of the front and rear LPR cameras in the same lane at a specific toll zone, the overlap duration shall be used for SET A2

KPI Calculation and Presentation

1. Video Image Capture Capability Availability =  $100 \times [1 - (\text{Sum}(A2[n])/N \times A1)]\%$   
Where N is the number of toll zones and n is the toll zone instance
2. Calculate and report the accuracy for the following scenarios:
  - a. System Wide (i.e. all Toll Zones)

Figure 6-6 Example Audit Verification Methodology

The audit will be considered complete once the Joint Board the final Audit report. In addition the Kapsch O&M Team will support and assist the Joint Board in case it wishes to conduct its own audits at any time during the maintenance period. Throughout the Maintenance Period Kapsch will use system analytics functions in MOMS to detect problems pro-actively, so that there are surprises expected during the Joint Board's System Certification Audit. If new issues are identified during this process, these will be resolved thru regular incident management system (trouble-ticket)

OM-009 The Toll System Provider shall plan, implement and remove lane closures for toll equipment preventative or emergency maintenance. The Toll System Provider shall utilize the most current state traffic control plans and standards applicable to the Roadside System for the state where the lane closure will occur. The Toll System Provider shall request lane closures in writing and in accordance with the applicable state policy. Any preventative maintenance lane closures shall be requested in writing at least 14 calendar days in advance. Emergency lane closures shall be requested with 12 hours prior written notice. Notice of any immediate lane closures shall be communicated to the Joint Board representative via phone and email as soon as possible.

X

Note: The Proposer shall include in the Price Proposal a unit price for each of the traffic control configurations outlined in the TCS. The States' Parties will reimburse the Toll System Provider for each approved lane closure required during installation and during maintenance of traffic.


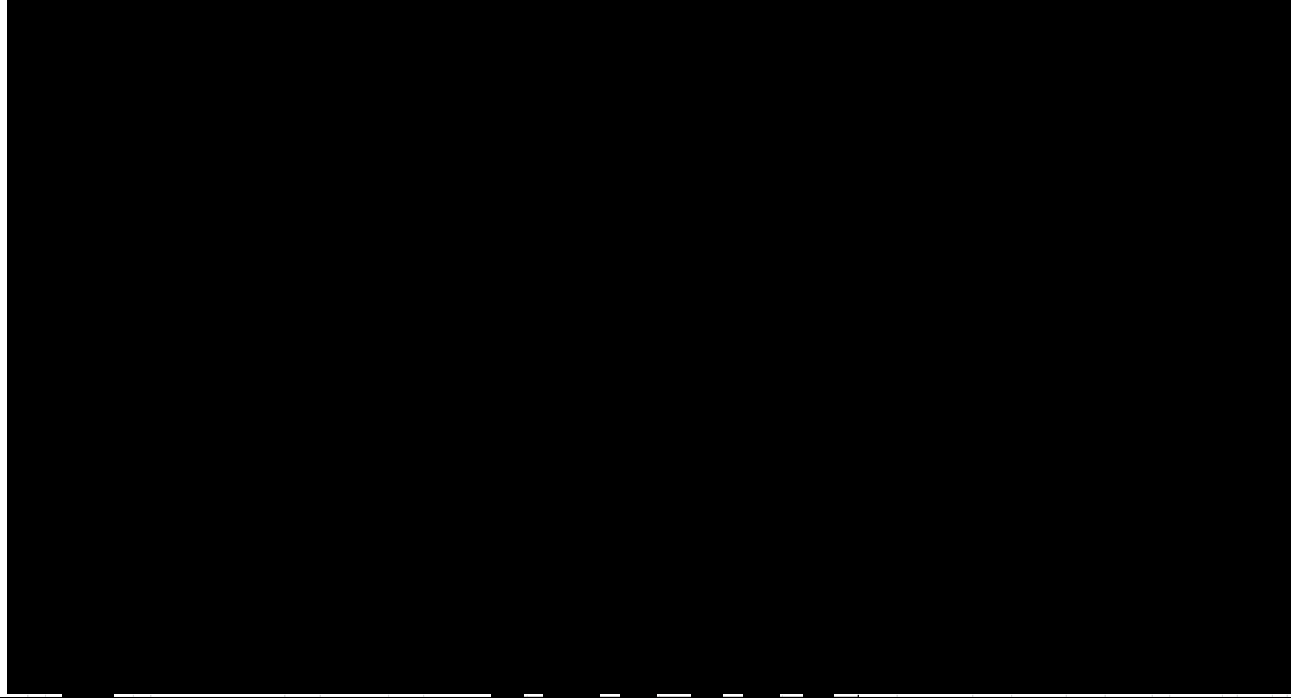
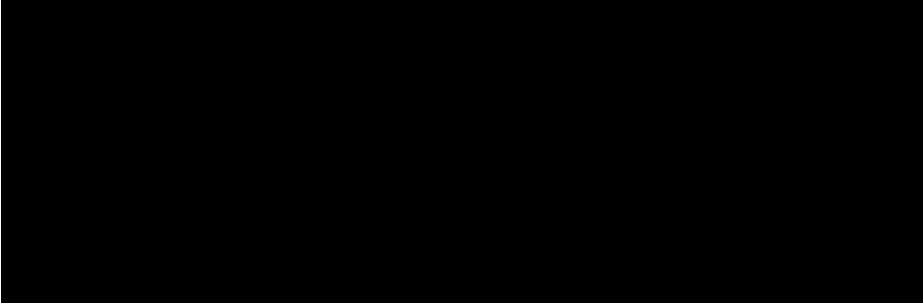
**Proposer Response:**

Kapsch fully complies with requirement OM-009 , and this compliance is described below:

Kapsch understands how critical Maintenance of Traffic is to successfully maintain a toll system. The company's maintenance team is currently performing maintenance related MOT on various projects in Texas, California and the E-ZPass regions. Based on that experience Kapsch has proven plans and procedures in place that address lane closures effectively. The responsibility for all MOT activities lies with the Roadside System Maintenance Manager. The manager will prepare all MOT plans and lane closure requests in compliance with the RFP requirements and all state and local regulations of Indiana and Kentucky. Kapsch will also use locally certified MOT providers to execute the any lane or shoulder closures. Kapsch has included a Unit Price for MOT at each of the traffic control configurations

Req ID	Operations and Maintenance (Section OM)	Required	Value Add
	outlined in the TCS into its price proposal.		
OM-010	The Toll System Provider shall log any lane closures including incidents reported by the Roadside System into MOMS. Any unusual circumstances shall also be noted in the incident report. If the information can be tracked and reported separately in MOMS, MOMS may be used to log incidents. A lane closure report shall identify who closed the lanes, start and end time of the closure, lane numbers closed and any comments or unusual events regarding the lane closure. If the lane closure was conducted by the Toll System Provider, a reason for the lane closure shall be included in the report. Any lane closures that occur within the Toll Zone area, defined as 1000 feet on either side of the Toll Zone, shall be reported to the States' Parties on a monthly basis.	X	
	<p>Note: This information is required so that the States' Parties or their agents can confirm the TSP accurately reconciles and identifies anomalies in traffic or revenue with these special events, and to reconcile any Customer Statements sent by the Toll System Provider for reimbursement.</p> <p>Proposer Response:  Kapsch fully complies with requirement OM-010 , and this compliance is described below:  All MOT within the Kapsch Team will be handled by its maintenance team and will be directly managed by the Roadside System Maintenance Manager. All MOT incidents will be tracked as a separate Work Orders in the Kapsch MOMS where they will be scheduled and tracked with the following information at a minimum:</p> <ul style="list-style-type: none"> <li>• Date when MOT was scheduled</li> <li>• Information on who requested the MOT</li> <li>• Reason for MOT</li> <li>• Information on who scheduled the MOT</li> <li>• Date &amp; Time of MOT</li> <li>• Location of MOT</li> <li>• Number of closed lanes</li> <li>• Toll Revenue Impact (Y/N)</li> <li>• Assigned owner of MOT</li> <li>• Status of MOT (requested / scheduled / in-progress / completed)</li> <li>• Room for Comment to note special events related to the MOT</li> </ul> <p>Logging all MOT in MOMS this way enables the Joint Board to track MOT activities and generate customized reports on the TSP's MOT activity. The Kapsch Project Management Team will include an MOT report to the Joint Board into the monthly Project Management Report highlighting any lane closures that occur within the Toll Zone area, defined as 1000 feet on either side of the Toll Zone as well as any MOT with unusual events or other items that require discussion. All MOT will be reportable using the report function of the KTC MOMS out of which customized reports shown all criteria listed above can be produced in excel or linked PDF format.</p>		

**Performance Requirements**

		Required	Value Add
Req ID	Performance Requirements (Section PR)		
	<b>Roadside System</b>		
PR-001	Roadside System shall be available 99.5% of the time. Notes: Compliance with availability requirements will be separately calculated and applied to each Equipment Lane for a Toll Zone as provided in Exhibit N. Available lanes are those with all of their components properly functioning - available to collect revenue and sending all Traffic Transactions and images to the BOS, as more particularly defined in Exhibit N. This 99.5% availability requirement excludes approved maintenance closures. This requirement will be evaluated for compliance on a monthly basis.  Proposer Response:    	X	
PR-002	The Roadside System shall be fully capable of reading and processing a minimum of 1,800 front and rear images (3,600 in total) per Equipment Lane per hour.	X	



Req ID	Performance Requirements (Section PR)	Required	Value Add
	<p>Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:</p> <p>[Redacted]</p>		
PR-003	<p>The Toll System Provider shall be fully capable of processing all license plate numbers including stacked letters.</p>	X	
	<p>Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:</p> <p>[Redacted]</p>		
PR-004			X
	[Intentionally not used].		
PR-005	<p>The Roadside System shall create and process Traffic Transactions for a minimum of one vehicle per second per equipment lane for fifteen (15) continuous seconds at each Toll Zone without any loss of vehicle data (i.e. classification, images, ETC, etc.).</p>	X	
	<p>Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:</p> <p>[Redacted]</p> <ul style="list-style-type: none"> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> </ul>		



Req ID	Performance Requirements (Section PR)	Required	Value Add
	<div style="background-color: black; width: 100%; height: 100%;"></div> <div style="background-color: black; width: 100%; height: 100%;"></div>		
PR-007	<p>Each vehicle passing through a Toll Zone shall be detected and reported once and only once (no exception for lane equipment or network degradation).</p>	X	
	<p>Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:</p> <div style="background-color: black; width: 100%; height: 100%;"></div>		

Req ID	Performance Requirements (Section PR)	Required	Value Add
	<p>[Redacted Performance Requirements]</p>		
PR-008	<p>For each vehicle passing through a Toll Zone, the TCS shall capture a sufficient number of images to provide the vehicle make, model and license plate number and correlate this information with the correct vehicle at an accuracy rate of 99.9%. All Images of a vehicle's license plate passing through a Toll Zone shall be human readable at an accuracy rate of 99%. All overview camera images of the vehicle shall be in color.</p>	X	
	<p>Note: The Proposer shall identify in this Technical Response Form the maximum detectible size (in feet for the length and height) of vehicles, and the number of images captured per transaction and made available to the BOS. This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:</p> <p>[Redacted Proposer Response]</p>		

Req ID	Performance Requirements (Section PR)	Required	Value Add
[REDACTED]	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
PR-009	<p>The Toll System Provider shall comply with the following times to respond to issues, deficiencies and problems and to repair equipment. These times are based on priority classification by event location and exclude provision of maintenance of traffic responsibilities (so long as such maintenance of traffic times are strictly within the time periods of this PR-009 section); These times apply 24 hours per day, 7 days per week:</p> <ul style="list-style-type: none"> <li>• Priority 1 –Four hours to respond</li> <li>• Priority 2 –24 hours to respond</li> <li>• Priority 3 –7 days to respond</li> </ul> <p>In all cases, setup of maintenance of traffic shall be no more than 1 hour upon approval, and demobilization of maintenance of traffic once repair is complete shall be no more than 1 hour.</p>	X	
[REDACTED]	<p>The Priority Levels are defined as follows:  Priority 1 is defined as – any failure that will result in loss of ability to collect or accurately collect revenue, including lane closures, safety hazard, or loss of traceability and loss of auditability in the TCS.  Priority 2 is defined as – any failure of a System component that will result in a degradation of System performance or results in the loss of redundancy in a key System component, but does not qualify as a Priority 1 event.</p>		

Req ID	Performance Requirements (Section PR)	Required	Value Add
	<p>Priority 3 is defined as – minor failure of the equipment, network or Software or an indication that an event may occur that would result in a malfunction or degradation of the System.</p> <p>In order to ensure maintenance of traffic notification is measured in a timely manner, the Joint Board shall be copied on the notification to the maintenance of traffic provider. The Joint Board, in its sole discretion, shall determine the priority of an event (and any delay or failure by the Joint Board to identify the priority shall indicate that the event has a priority level of Priority 1).</p> <p>Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:</p> <p>[Redacted]</p>		
	<b>Back Office System</b>		
PR-010	<p>The BOS, including the IVR and Customer Website shall be available 99.9% of the time (See Exhibit N to the Agreement for details regarding calculation of BOS availability.) The BOS shall provide all functional service at a 99.9% availability excluding approved routine or approved scheduled maintenance periods of up to 80 hours per year.</p>	X	
	<p>Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:</p> <p>[Redacted]</p>		
PR-011	[Intentionally not used.]		
	No response required.		
PR-012	<p>Home and away agency Transponder status files shall be loaded and distributed to the TCS within 2 hours of receipt at least 99% of the time. If the Toll System Provider has written proof that the away Transponder status file was not sent by the away agency, failure to load and distribute a Transponder file for such away agency shall not be counted as a failure in the calculation.</p>	X	
	<p>Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p>		

Req ID	Performance Requirements (Section PR)	Required	Value Add
	<p>Proposer Response:</p> <p>[REDACTED]</p>		
PR-013	<p>The BOS shall post 99.8% of Traffic Transactions, Financial Transactions, and Event Transactions completely and accurately to the TCS. Any exceptions shall be recorded with an "exception" transaction in the system with an appropriate exception code.</p>	X	
	<p>Note: This requirement will be evaluated for by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>		
PR-014	<p>The Toll System Provider shall review and accurately post to the appropriate account all Traffic Transactions in accordance with the approved Business Rules no later than 4 days after the vehicle passed through the Toll Zone, at an accuracy level of 99.5% or higher. Images embedded in any Correspondence shall include a color picture that clearly identifies the make, model, color and license plate of the vehicle.</p>	X	
	<p>Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>		

Req ID	Performance Requirements (Section PR)	Required	Value Add
	[Redacted]		
PR-015	All required Financial Transactions shall be processed within one (1) business day of business day closure on the day they occurred. Financial Transactions shall include all payments (regardless of payment method). Weekend or holiday Transactions shall be processed no later than the following business day.	X	
	<p>Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:</p> <p>[Redacted]</p> <ul style="list-style-type: none"> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> </ul>		
PR-016	All required financial exceptions shall be processed within one (1) business day of business day closure on the day they occurred. Financial exceptions are adjustments, reversals or refunds.	X	
	<p>Note: This requirement will be evaluated for compliance by the Joint Board on a monthly basis. The timeframe for a disputed transaction for E-ZPass transactions outside of Toll System Provider's control will be determined during development of the approved Business Rules.</p> <p>Proposer Response:</p> <p>[Redacted]</p>		
PR-017	The Toll System Provider shall enter into the System all license plate and demographic information received from a DMV within one (1) day of data receipt.	X	
	<p>Note: This requirement will be evaluated for compliance by the Joint Board on a monthly basis.</p> <p>Proposer Response:</p> <p>[Redacted]</p>		



		Required	Value Add
Req ID	Performance Requirements (Section PR)		
	[Redacted]		
	<b>Customer Service Center</b>		
PR-018	The average call wait time shall not exceed a monthly average of 1 minute through the term of the Contract as reported on the phone system reports. The average call wait time is measured based on all calls received during a monthly period. Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.	X	
	Proposer Response: [Redacted]		
PR-019	All calls shall be handled in a professional and courteous manner all of the time. The Toll System Provider shall monitor at least 2% of all calls, measured monthly commencing with Pre-Toll Operations. For calls monitored the TSP shall have a regular quality control process and results shall be reported in the Monthly	X	

Req ID	Performance Requirements (Section PR)	Required	Value Add
	<p>Operations and Maintenance Report.</p> <p>Note: This requirement will be evaluated for compliance by the Joint Board on a monthly basis.</p> <p>Proposer Response:</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>		
PR-020	<p>Best efforts shall be made to resolve escalated calls related to TCS services and policies while the customer is on the telephone without need for a call-back. Escalations that require involvement of an external agency are not included for purposes of calculating compliance with this requirement. TSP shall open a service request for all escalations that cannot be addressed while the customer is on the phone, and shall track the service request through the reporting system.</p>	X	
	<p>Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement PR-020 , and this compliance is described below:  We have an escalation policy that provides customers that request higher level management a means to get response without a call back. Our escalation path is from agent to team lead to supervisor to manager. De-escalation training is provided to agents to minimize the number of escalated calls, and staffing as well as schedules are planned to ensure escalation support.</p>		
PR-021	<p>The TSP shall not escalate more than 5% of the total calls received by the CSC outside of the CSC.</p>	X	
	<p>Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement PR-021 , and this compliance is described below:  Outside of interoperability issues, Standard Operating Procedures have ensured that calls that are escalated outside our call center are well below 1%. Typically we</p>		

		Required	Value Add
Req ID	Performance Requirements (Section PR)		
	are 0.1% - 0.4%		
PR-022	The CSC shall resolve a minimum of 65% of calls during Startup Operations and 80% of the calls during Steady State Operations regarding ETC transactions, video transactions, Violations, products, services and policies accurately on the first contact made by the customer.	X	
	Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis. The resolution of the call shall mean that the customer's questions were answered in way such that the customer does not have to call back for the same issue or information was provided in response to the customer inquiry in way such that the customer does not have to call back for the same issue.  Proposer Response: Kapsch fully complies with requirement PR-022 , and this compliance is described below: Our current first call resolution rates range from 80-85%. This includes issues related to interoperability disputes, registration disputes and collection settlements.		
PR-023	All call monitoring shall be part of the regular QC process and reported in the Monthly Operations and Maintenance Report. The TSP shall cooperate with and assist the Joint Board in conducting random monitoring and recording the results.	X	
	Note: This requirement will be evaluated by the Joint Board for compliance with this requirement on a monthly basis.  Proposer Response: Kapsch fully complies with requirement PR-023 , and this compliance is described below: Please refer to PR-019 regarding call auditing and monitoring. All of our calls are recorded and stored for two years. Calls can be provided to the Joint Board upon request. In addition, live monitoring can be conducted at any time at the request of the Joint Board.		
PR-024	Customer Correspondence shall be stamped as received the business day it is received. Correspondence received on non-business days shall be stamped as received on the first business day after the non-business day.	X	
	Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.  Proposer Response: Kapsch fully complies with requirement PR-024 , and this compliance is described below: Our front desk mail room procedures are to stamp correspondence when it is received. If correspondence is received through the lockbox, it is scanned and recorded same day.		
PR-025	All new customer account applications shall be processed and recorded within the System within two (2) business days of receipt of the completed application.	X	
	Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.  Proposer Response: Kapsch fully complies with requirement PR-025 , and this compliance is described below: All correspondence requiring Kapsch action is processed within 1-3 business days. New applications will be given priority to ensure entry within 2 business days.		
PR-026	All payment types (check cash or credit card) shall be processed for payment by the System within one business day.	X	
	Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.  Proposer Response: Kapsch fully complies with requirement PR-026 , and this compliance is described below: All payment types (check cash or credit card) shall be processed for payment by the System within one business day. Please reference PR-015 for more info.		
PR-027	100% of all correspondence types other than payments shall be processed and recorded in the System within three (3) business days.	X	
	Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.  Proposer Response:		

Req ID	Performance Requirements (Section PR)	Required	Value Add
	<p>Kapsch fully complies with requirement PR-027 , and this compliance is described below:  Kapsch has the systems and personnel in place to review and respond to written inquiries and other correspondence within three business days. Upon identification during the mail extraction process (in Kapsch’s secure lockbox facility), images of the correspondence are provided to specialists to read and disposition. We will use templates (which will be approved by the Joint Board prior to go-live) which address 90% of written questions and comments. The remaining 10% are responded to in a case-by-case manner. For correspondence which contains multiple points of inquiry, our personnel will utilize paragraphs from the pertinent response templates and through system key entries, new response letters are generated with bridging verbiage to ensure smooth content flow while still using the core verbiage the Joint Board has approved.</p> <div style="border: 1px solid blue; padding: 5px; color: blue; font-weight: bold;"> <p><i>Kapsch’s total time from receipt to response of written correspondence is one to three business days.</i></p> </div>		
PR-028	<p>All money paid to the CSC shall be credited into the designated bank accounts provided by the Joint Board. All customer payments shall be deposited within 24 hours of when they are received; if such day is a weekend or holiday day on which the relevant bank is closed, the deposit shall be made by the next Day on which the relevant bank is open for business.</p>	X	
	<p>Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:  Kapsch fully complies with requirement PR-028 , and this compliance is described below:  PR – 028: All money paid to the CSC shall be credited into the designated bank accounts provided by the Joint Board. All customer payments shall be deposited within 24 hours of when they are received.  **Payments are received via electronic funding sources (credit card, ACH, Check 21, cash partners) or through our internal mail-in lockbox. In the case of electronic funding, MSB will reconcile daily transaction reports to deposits to ensure a 1 for 1 tie-out, and then provide a daily funding report, batch report, deposit, and transaction report to the Joint Board for review and if applicable, independent reconciliation. In the case of hard copy deposits, MSB contracts with a bonded and insured bank courier to retrieve deposits twice daily, at varying times. Any mail-in payments not processed by the bank cut-off will be prepped for the following pick-up the next business day (usually in the a.m.).  In all cases, deposit of payments and funding to the Joint Board will occur within 1 business day of receipt.</p>		
PR-029	<p>The CSC availability shall meet the following minimum requirements.  Self Service – 24 hours x 7 days per week  For Startup Operations: Customer Service Representative and Walk Up Center - Monday-Friday 7 am-7pm Saturday 8am-2pm, Eastern Standard Time, excluding approved holidays.  For Steady State Operations: Customer Service Representative and Walk Up Center - Monday-Friday 8 am-6pm, Eastern Standard Time, excluding approved holidays.  Holidays on which the CSC may be closed include New Year’s Day, Memorial Day, the 4th of July, Labor Day, Thanksgiving Day, Christmas Day and other holidays mutually agreed to by the Toll System Provider and the Joint Board. The Toll System Provider shall work with the Joint Board to jointly develop the Holiday schedule for each Contract year.</p>	X	
	<p>Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.</p> <p>Proposer Response:  Kapsch fully complies with requirement PR-029 , and this compliance is described below:  Our standard operating hours are from 8:00AM to 7:00PM M-F. We often operate weekend shifts to support special promotions or collection efforts. We will operate per the schedule the Joint Board desires. Our self-service options (web site, IVR) are available 24X7 with the exception of scheduled maintenance.</p>		
PR-030	<p>The Toll System Provider shall notify the Joint Board of all planned outages at least one week in advance. The Toll System Provider shall notify the Joint Board within 2 hours of a known unplanned outage with notice of the planned up time.</p>	X	

		Required	Value Add
Req ID	Performance Requirements (Section PR)		
	Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.  Proposer Response: [Redacted] [Redacted]s.		
PR-031	99.99% of Transponder orders placed in person shall be filled within the same business day. All Transponder orders placed in person not filled in the same business day in which the order was placed shall be filled before the end of the next business day. 90% of Transponder orders not placed in person shall be filled before the end of the day after the day in which the order was placed. All Transponder orders not filled before the end of the day after the day in which the order was placed shall be filled before the end of the second business day after the day in which the order was placed. In person orders are those placed at a Walk-Up Centers or at a retail provider. An order is filled when it is either handed to the customer or mailed to the customer at the best address available to the TSP as indicated in the Business Rules.	X	
	Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.  Proposer Response: [Redacted] [Redacted] [Redacted].		
PR-032	The Toll System Provider staff shall be scheduled according to expected call arrivals in order to comply with the requirement that a minimum of 80% of calls be answered by a live representative within 30 seconds, calculated by dividing the number of calls answered by a live representative within 30 seconds by total number of calls received by the IVR.	X	
	Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.  Proposer Response: [Redacted] [Redacted]		
PR-033	It is desired that the IVR answer in one ring cycle for inbound calls and customers enter the IVR tree to be presented self-service options or allowed to speak with a customer service representative during business hours.		X
	Note: If Proposer indicates it will provide this functionality, this requirement will be evaluated by the Joint Board for compliance on a monthly basis.  Proposer Response: Ka [Redacted] [Redacted] [Redacted] [Redacted]		
PR-034	[Intentionally not used.]		
	Proposer Response: No response required.		
PR-035	[Intentionally not used.]		



Req ID	Performance Requirements (Section PR)	Required	Value Add

**Financial Requirements**

Req ID	Financial Requirements (Section FR)	Required	Value Add
FR-01	All elements of the TCS shall be subject to audit of Financial Transactions, Traffic Transactions and Event Transactions.	X	
	<p>Note: The Revenue Control Manager, external auditors or other entities will audit and require Transaction reconciliation of the TCS from the Roadside System through the BOS.</p> <p>Proposer Response:  Kapsch fully complies with requirement FR-01 , and this compliance is described below:  All elements of the TCS, from the lane through the back office, provide transparency and auditability for every transaction. The RSS creates E-ZPass and video transactions (both account and violation) for each vehicle transiting a toll zone and assigns a unique sequence number for each transaction. Any traffic transaction that contains an anomaly is flagged as such for further investigation and disposition (see RS-003 for further information). The transactions are transmitted from the roadside to the RSS Host and then to the BOS Host using guaranteed messaging protocols, ensuring that each transaction is transmitted through the system correctly. Any gap in transaction sequence numbers will trigger a MOMS alert for further investigation and resolution. Every transaction in the solution is logged with the date, time, and origination of the transactions providing high levels of traceability throughout the system. The BOS provides 100% transaction reconciliation at any given point of time for any user selected time period. The BOS accounts for every single transaction that comes from the RSS and provides both summary and detailed reconciliation. Journal entries in the BOS accounting system are made as each toll transaction goes through account posting and aging. For every activity that has financial impact in the BOS, a corresponding journal entry is made in the financial accounting system which is then used to provide reconciliation and audit functions. The BOS also uses wide range of reconciliation formulas to reconcile various system activities.  In addition to the TCS solution capabilities, the operations team will use proven standard operating procedures (SOPs) for daily and other periodic reconciliation activities. Reconciliations must be reviewed and approved by authorized personnel. The operations team will work closely with the Revenue Control, external auditors, or other entities authorized by the Joint Board to complete the required transaction audit and reconciliations.  Kapsch's systems and the SOPs have been used successfully in other high-volume toll operations and provide assurance to the Joint Board that all transactions are auditable, traceable throughout the system, and can be reconciled.</p>		
FR-02	The Toll System Provider shall provide a TCS that meets US GAAP policy and procedures and is subject to US GAAP audits and compliance on a regular basis. All elements of the TCS shall be subject to audit of Financial Transactions, Traffic Transactions, and Event Transactions. The Toll System Provider shall hire a major independent certified public accounting firm to perform a Service Organization Control (SOC 1) Type 2 audit annually in accordance with Statement on Standards for Attestation Engagement No.16 (SSAE 16) and provide such report within 90 days after close of June 30th fiscal year to the Joint Board. This review shall include the effectiveness of operational controls related to software, procedures, data, security, processing integrity, confidentiality and privacy. The costs for such audits shall be borne by the Toll Services Provider.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement FR-02 , and this compliance is described below:  Kapsch shall provide a robust US GAAP-compliant financial accounting system in the BOS with a chart of accounts using standard T-accounts. All financial transactions generate a journal entry regardless of where the transaction was initiated (roadside, online by the customer, automatic rebills, etc.).  Kapsch shall provide the Joint Board with an annual Service Organization Control (SOC 1) Type 2 audit in accordance with SSAE 16 audit standards of the Project, within 90 days after close of June 30th fiscal year, conducted by a major independent U.S. certified public accounting firm.</p>		
FR-03	The Toll System Provider shall coordinate with the Revenue Control Manager and Custodian. The Toll System Provider shall be a party to the Custody and Revenue Control Agreement, substantially in the Form of Exhibit O to the Agreement, once finalized prior to Revenue Service.	X	
	Note: The Joint Board anticipates that Transaction reconciliation will be performed, and top level secure financial accounts will be established and managed, substantially as outlined in Attachment C-3. The Joint Board has contracted with a Revenue Control Manager that will be responsible for the confirmation and certification of reconciled funds received from the Toll System Provider. A Custodian established pursuant to the Custody and Revenue Control Agreement will serve as the trustee's representative to distribute revenues into the States' Parties' accounts.		



Req ID	Financial Requirements (Section FR)	Required	Value Add
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-03 , and this compliance is described below:  Kapsch's Finance Manager will work with and coordinate with the Revenue Control Manager and Custodian and Kapsch will be a party to the Custody and Revenue Control Agreement, once finalized prior to Revenue Service. As part of the required coordination and to meet the Joint Board's revenue collection and reconciliation objectives, the Kapsch operations team will perform the duties outlined in Article IV Toll Operator Duties of Attachment O - Custody and Revenue Control Agreement.</p> <p>Kapsch shall provide the following BOS functions in accordance with GAAP procedures and the Joint Board's business rules:</p> <ul style="list-style-type: none"> <li>• Maintain a ledger(s) account showing all financial data and data transactions with respect to the project;</li> <li>• Maintain a ledger(s) regarding activity on customer accounts;</li> <li>• Maintain a ledger(s) in pre-paid customer accounts showing available balances for application to tolls due;</li> <li>• Perform daily reconciliation of financial transactions and data transactions with respect to customer accounts;</li> <li>• Deliver daily reconciliation certificates with respect to transfers to and from cash management accounts and master custodial accounts;</li> <li>• Cooperate with Revenue Control Manager in the performance of the latter's duties;</li> <li>• Perform daily roll forward of ledger balances from all master custodial accounts and cash management accounts.</li> </ul> <p>Based on its past experience managing, reconciling, and auditing revenue collection systems, Kapsch is confident that it will meet or exceed the Joint Board's requirements.</p>		
FR-04	<p>The Toll System Provider shall adhere to the Flow of Funds diagram in Attachment C-3 in handling all Funds.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-04 , and this compliance is described below:  Both the BOS and existing SOPs currently support the Flow of Funds diagram in Attachment C-3 for internal (pre-paid), external (interoperable E-ZPass), and post-pay accounts as well as the flow of revenue from other sources such as third-party retailers (not shown in the Attachment C-3). Kapsch will work closely with the Joint Board to ensure the required cash receipt, cash management accounts, ledger maintenance, refunds, postings, and transfer work flows are clearly understood, defined, and followed within the system and within the operations. The BOS provides transparency and auditability throughout the system which will clearly demonstrate that we adhere to the Flow of Funds structure as required. Please refer to BO-124 for full audit flow of the transactions through the BOS.</p> <p>The process for handling funds is outlined below:</p> <ul style="list-style-type: none"> <li>• All payment received are posted via Kapsch's secure payment posting department.</li> <li>• Payments are posted daily to the appropriate payment buckets in our BOS system.</li> <li>• The Payment Posting team balances the postings with the BOS cash journal.</li> <li>• Kapsch's Finance Team will reconcile the daily cash journal to the deposits in the bank.</li> <li>• The Finance Team will post the cash journal to the appropriate GL accounts based on the payment buckets from the cash journal.</li> <li>• Kapsch's Billing Team will process an invoice weekly from the BOS system. The invoice is reviewed/reconciled by the Finance Department. Once the invoice is reviewed by the Finance Dept., it is approved by Kapsch's Finance Manager. The invoice is then sent to LSIORB's Revenue Control Manager along with funding (Funding will be sent by ACH to the accounts set up by the client).</li> </ul>		

Req ID

Financial Requirements (Section FR)

Required Value Add

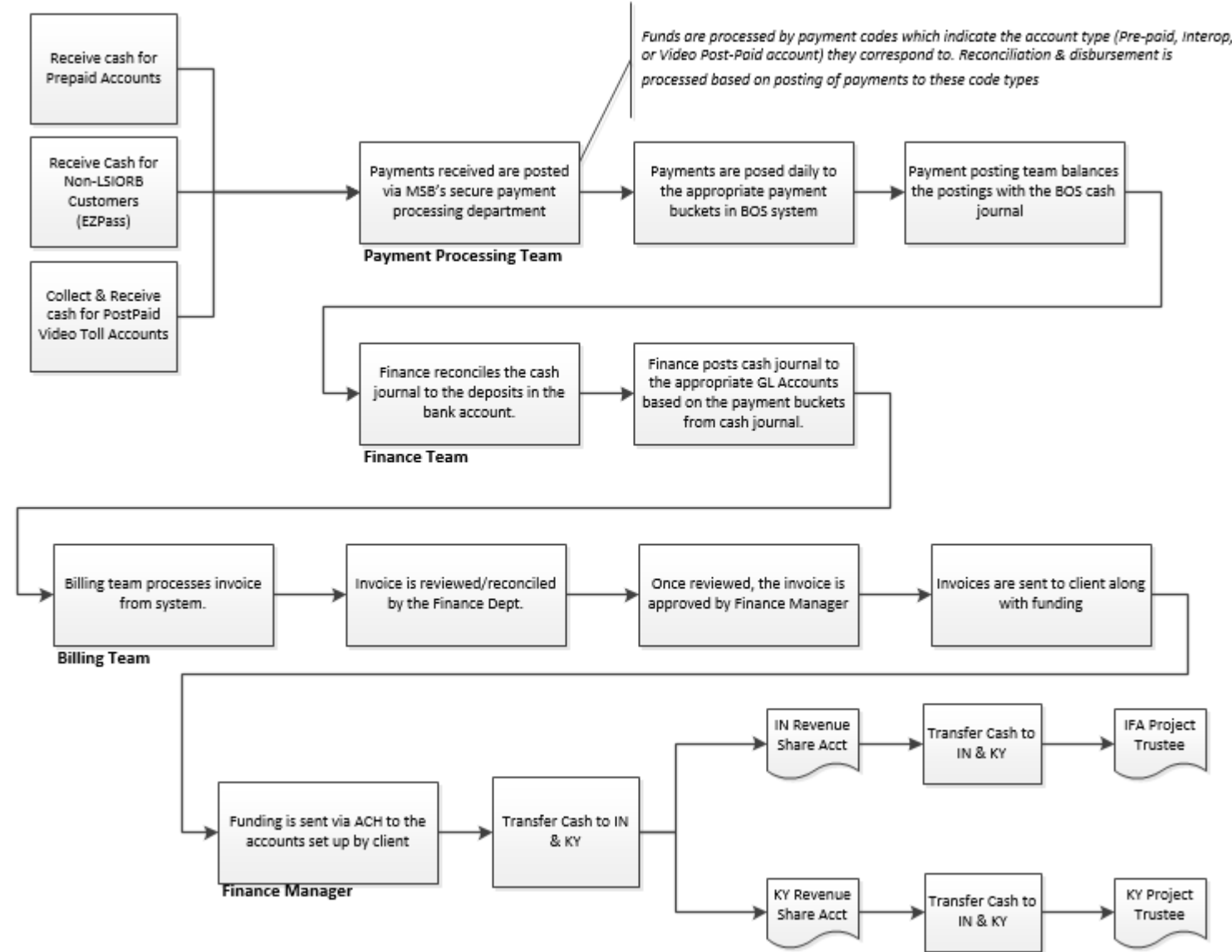


Figure 8-1 Flow of Funds Diagram

FR-05

The Toll System Provider shall reconcile Financial Transactions transmitted to Custodian Accounts on a daily basis. All revenues and funds shall be swept on a daily basis to the Custodian to ensure that all revenues are deposited in a secure account and reconciled prior to the distribution to the States' Parties' accounts.

X

Note: The Proposer shall describe in this Technical Response Form how the TCS handles movement of funds and reconciliation of Transactions in the System.

Proposer Response:

Kapsch fully complies with requirement FR-05 , and this compliance is described below:

Kapsch will establish procedures whereby all revenues and funds are either deposited directly or swept to Custodian Accounts on a daily basis, thereby ensuring security for funds. All revenues and funds are reconciled on a daily basis and each transaction, including financial transactions, are traceable through the system from their inception to their final disposition.

Req ID	Financial Requirements (Section FR)	Required	Value Add
	<ul style="list-style-type: none"> <li>Account payments enter the system through automatic (credit card rebill) or manual means (via customers directly or customer service operations) and credited to the appropriate customer accounts. Transactions are logged with the origination, time, date, payment type (cash, check, credit card type, etc.) and amount. Funds are deposited into either the Custodian Accounts or a sweep account that is swept to the Custodian Accounts on a nightly basis.</li> <li>Similar to account payments, violation payments enter the system and are posted against the appropriate violation account. Violation payments are always made manually either directly by the customer via the website, or through the customer service channels (walk-up centers, mail, call centers, etc.). Transactions are logged with the origination, time, date, payment type (cash, check, credit card type, etc.) and amount. Payments are credited against the appropriate violation and funds are deposited into either the Custodian Accounts or a sweep account that is swept to the Custodian Accounts on a nightly basis.</li> <li>Third-party retailer funds are received along with their reconciliation of sold inventory and/or other revenue and, if not gross receipts, an accounting of any deductions taken from the anticipated gross payment. These payments are recorded per the Joint Board business rules and the funds are deposited into either the Custodian Accounts or a sweep account that is swept to the Custodian Accounts on a nightly basis.</li> <li>E-ZPass interoperable payments are received along with the appropriate reconciliation files. The files are processed automatically by the BOS and funds are deposited into either the Custodian Accounts or a sweep account that is swept to the Custodian Accounts on a nightly basis. Any deviation from the anticipated payment will be investigated and resolved by authorized operations/finance personnel.</li> <li>Refunds for closed accounts or authorized adjustments will be handled per the Joint Board's business rules. Each refund is logged with the CSR making the refund, the amount, the date, the time, and the reason for the refund. It is anticipated that accounts with registered credit/debit cards will have the refund amount credited back to the card on file and that a check will be issued for accounts that use cash or check as the payment type. Funding for refunds will be handled per the Joint Board business rules including reimbursement from the Custodial Accounts and/or the States' Parties accounts as appropriate.</li> </ul> <p>Kapsch will provide reconciliation of all revenues and funds on a daily basis (along with other regular period reconciliations as required) to support the transfer of funds to the Custodian Accounts. Because of the power of the BOS, the majority of this reconciliation is performed by the system, ensuring that all funds and revenues are captured. Any exceptions, anomalies, or adjustments will only be investigated and handled by authorized personnel who will also generate the final reconciliation reports that coincide with the amount deposited into the Custodian Accounts.</p> <p>Kapsch shall provide the following reconciliation report:</p> <ul style="list-style-type: none"> <li>Clearinghouse Suspense Account Report. This report conveys information about transaction type settlement activity related to security deposits, wire transfers, NSFS, etc. Content includes transponder sales; security deposits; revenue amount of total NSF's; revenue amount of NSF's collected; comptroller wire transfers; cash received from lanes; bad check fees.</li> <li>Account Holder Prepaid Funds Account Report. This report conveys information on tag holder activity that was posted through the clearinghouse suspense account related to the receipt, settlement, or adjustment made with respect to prepaid funds for account holder accounts.</li> <li>Account Holder Revenue Account Report. This report conveys information about toll road transactions incurred by account holders.</li> <li>Video Trip Suspense Account Report. This report conveys information about fund deposits related to overpayments and subsequent adjustments related to video trips.</li> <li>Video Trip Revenue Account Report. This report conveys information about fund deposits for video trips that were posted. This would include a summary of transactions undertaken by vehicles with readable images, transactions undertaken by vehicles with non-readable images, and account holder transactions with insufficient account funds.</li> <li>Transponder Issuer Revenue Account Report. This report conveys information about fund deposits for toll interoperability activity.</li> </ul> <p>The combination of the BOS reconciliation functions, the visibility and traceability of all transactions in the system, and the professional knowledge and expertise of Kapsch's operations group will ensure that all funds will be reconciled, accounted for and securely flow to the appropriate Custodian Accounts and subsequently to the States' Parties.</p>		
FR-06	The Toll System Provider shall interface the TCS with a commercial accounting system provided by the Revenue Control Manager.	X	
	Note: The accounting system will be determined at a later date, currently anticipated to be available prior to NTP.		

Req ID	Financial Requirements (Section FR)	Required	Value Add
	<p>Proposer Response:  Kapsch fully complies with requirement FR-06 , and this compliance is described below:  The Kapsch BOS is a robust, flexible system with the ability to interface with required outside systems, including a commercial accounting system provided by the Revenue Control Manager. The Kapsch BOS has an integrated US GAAP-compliant financial accounting system with standard T-Accounts. As such, there should be a seamless interface between the Kapsch BOS and the commercial accounting system. The interface will be defined by an interface control document and will be tested and verified per the Master Test Plan.  The Kapsch Team has successfully interfaced the proposed BOS with numerous outside systems including interfacing with Microsoft Dynamics GP, a financial management system  The Kapsch Team will work closely with the Revenue Control Manager to ensure this important interface is operational to support revenue collection and accounting.</p>		
FR-07	The Toll System Provider shall update the accounting system with current financial elements of the System (debits/credits) no less frequent than every 24 hours.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement FR-07 , and this compliance is described below:  All financial elements (payments, toll transactions, refunds, adjustments, etc.) will be updated per the Key Performance Requirements. Automated debits and credits, such as toll transactions and payments from ACH or the website, are entered in near real-time. Manual debits and credits, such as those received via mail at the Customer Service Center, are processed within the required timeframes and the system is updated immediately upon entry by a customer service representative. Reconciliation of all financial elements occurs on a daily basis.  Both the power of the BOS and the proven SOPs of the Kapsch operations team ensure timely update and reconciliation of all financial elements on a timely manner.</p>		
FR-08	The TCS shall track interoperable Financial Transactions by interoperable agency.	X	
	<p>Proposer Response:  Kapsch fully complies with requirement FR-08 , and this compliance is described below:  The current Kapsch BOS accurately provides interoperability for millions of toll customers in Texas. In response to the requirements of the project, Kapsch will incorporate the latest E-ZPass Interoperability policies and specifications and will ensure that the system is kept current with these policies and specifications over the course of the project. As part of these policies, as well as inherent in the BOS financial accounting package, financial transactions will be tracked and reported on by interoperable "away" agency. Specifically, the following files (per current E-ZPass standards) will be processed, reconciled, and reported on by agency:</p> <ul style="list-style-type: none"> <li>• Tag status file</li> <li>• Tag status update file</li> <li>• Invalid tag customer file</li> <li>• Transaction file</li> <li>• Transaction reconciliation file</li> <li>• Correction file</li> <li>• Correction reconciliation file</li> <li>• Customer license plate file</li> <li>• Non-toll transaction file</li> <li>• Non-toll reconciliation file</li> <li>• Non-toll correction file</li> <li>• Non-toll correction reconciliation file</li> </ul> <p>The experience of the Kapsch being the authorized provider of E-ZPass products, the expertise currently being provided by the team for interoperable operations, and the power and flexibility of the Kapsch BOS will provide the interoperability functions required by the project.</p>		
FR-09	The Toll System Provider shall map financial (cash management and custodial) accounts established by the Joint Board to multiple Financial Transaction codes	X	

Req ID	Financial Requirements (Section FR)	Required	Value Add
	(e.g. tolls, fees, credit payments, adjustments and reversals) and such accounts and codes shall be traceable in the TCS to demonstrate that the financial accounting system (provided by others) reconciles with the TCS.		
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-09 , and this compliance is described below:  The Kapsch BOS has an integral financial accounting system that supports mapping financial accounts to multiple financial transaction codes as required by the Joint Board. Included in this capability are:</p> <ul style="list-style-type: none"> <li>• Transaction Types set up: The BOS financial accounting uses the transaction type set up when establishing transaction types in the ledger. New transaction types can be entered and mapped with debit and credit chart of accounts.</li> <li>• Journal Entries: All activities in the system (create new account, account replenishment, etc.) will create corresponding general journal entries with credit and debit T-accounts.</li> </ul> <p>As discussed above, all transactions are traceable throughout the TCS and the BOS is 100% reconcilable at any point in time. The Kapsch operations team will work with the Joint Board staff to ensure that the BOS and the third-party financial accounting system reconciles with the TCS.</p>		
FR-010	The Toll System Provider shall make customer refunds within 24 hours of confirmation that a refund is owed, and shall make payments to interoperable agencies and transfer funds received for deposit into Joint Board accounts, in accordance with the approved Business Rules.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-10 , and this compliance is described below:  The Kapsch CSR staff will be trained to follow proven procedures that ensure required adjustments are made prior to closing an account and process any refunds. This may involve procedures relating to posting of interoperable, home agency or video-based transactions. Account closures and refunds will be processed in a manner consistent with the Joint Board's business rules, and within 24 hours of confirmation a refund is owed. Once confirmation is received that the refund is owed, the CSR will process the refund to the customer per approved business rules regarding credit/debit card-based accounts and cash/check-based accounts. As appropriate, refunds will be credited to the customer's credit/debit card on file or be issued a check for the confirmed refund amount.  Likewise, reconciliation payments to interoperable agencies will be made once the payments have been calculated and verified. Payment transfers will be scheduled in accordance with the Joint Board's business rules and E-ZPass regulations.  As discussed in FR-05 above, the transfer of funds received for deposit into the Custodial Account and subsequently into the States' Parties will be processed on a daily basis.  Timely and accurate handling of funds is essential for both good customer relations and fiscal responsibility. As with its other customers, Kapsch is committed to meeting these Joint Board goals with system functionality, clearly defined SOPs, and staff expertise.</p>		
FR-011	The Toll System Provider shall track receipt and disbursement of payments in the TCS by payment type and source, including but not limited to: by interoperable agency, by payment type (credit card, cash, check), by refunds or adjustments, and by tolls or fees such as invoice fees, administrative fees or penalties.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-011 , and this compliance is described below:  The Kapsch BOS is both robust and flexible and provides a wide range of reconciliation and reporting features. All transactions in the BOS are logged by type (payment, refunds, adjustments, tolls, other fees), origination (including interoperable agency, CSR, customer website, etc.), payment type (cash, check, credit/debit card type), amount, time, and date. Kapsch will track both receipt and disbursement of all payments in the TCS by these various factors providing the Joint Board with unparalleled visibility into its financial operations.</p>		
FR-012	Overpayments or underpayments shall be applied to an account, and records of the overpayments and underpayments to an account shall be readily available for review in reports generated by the TCS. Unapplied balances shall be transferrable to the customer account Customer Statements where applicable. An unapplied balance report shall be available on a daily, weekly and monthly basis.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-012 , and this compliance is described below:  Overpayments or underpayments most often occur in post-paid accounts and violation payments where the customer does not remit the correct amount.</p>		

Req ID	Financial Requirements (Section FR)	Required	Value Add
	<p>Underpayments are self-resolving in that any underpayment amount is reflected on subsequent invoices to the customer. When an overpayment occurs, the overage is automatically applied to the account and can be used for future toll transactions or can be made available for a customer refund as defined by the Joint Board's business rules. Based on the BOS financial accounting system, all overages must be applied to an account in order to balance and reconcile. It would, therefore, be extremely unusual to have an unapplied balance in the system. However, an unapplied balance report will be available on a daily, weekly, and monthly basis in case this should occur.</p> <p>Kapsch's experience in dealing with customer accounts has resulted in a system designed to accommodate unusual occurrences such as customer over- or underpayments and report on them accordingly.</p>		
FR-013	<p>The Toll System Provider shall provide exceptions management system functionality and an exceptions operation process for payment. For example, the TCS shall have an operational procedure so that if payments without an account remittance slip are received by the lockbox, the operator is able to research and locate the account holder in the system, and apply the unallocated funds to a credit on a customer account. The TCS shall include a coding mechanism in the ERS that provides sufficient reporting to track any exceptions.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-13 , and this compliance is described below:</p> <p>The Kapsch BOS provides exceptions management system functionality and an exceptions operation process for payment. As part of the lockbox processing service payments that are received without appropriate identification, they are "excepted out" for further investigation by the lockbox staff. MSB's lockbox operation includes solving problems, aggressively and completely, addressing operational problems quickly and efficiently and anticipating issues and submitting preventative measures to correct issues in a timely manner. Payments exceptions (including multiple payments with a single remittance document; payment received with no remittance document; single payment with multiple remittance documents) are processed according to the SOPs outlined for exception processing which includes researching and locating the account holder in the system, and applying the unallocated funds to a credit on a customer account. The exception process outlined in the lockbox SOPs includes a coding mechanism in that provides sufficient reporting to track any exceptions.</p> <p>The Kapsch BOS provides a robust search facility that makes it efficient for operations staff to identify accounts. Accounts can be searched by name, address, license plate and other identifying elements permitting the accurately and timely application of payments to the account.</p>		
FR-014	<p>Updates to Financial Transactions shall never modify existing Transactions. All Financial Transactions shall be appended to the original record when fees, fines, or tolls are partially or wholly discounted or escalated manually by an operator of the System. A list of all Financial Transactions (including codes) shall be provided in the System Documentation and logged with the associated Traffic Transactions in the TCS.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-14 , and this compliance is described below:</p> <p>One of the primary security features of the Kapsch BOS is that a transaction is never deleted or modified. If adjustments need to be made to an account, it is done through subsequent transactions which are appended to the original transaction, making all transactions traceable from origination to final disposition. All transactions are logged with the origination, date, time, type of transaction, and amount. Certain transactions may be restricted to require supervisor approval. Kapsch will provide system documentation as required by the ITP, including a list of financial transactions (and associated codes).</p> <p>The goal of Kapsch is to provide the Joint Board with a fully-featured TCS that provides visibility and traceability of all transactions throughout the TCS system. This will support the Joint Board's goals of fiscal responsibility and accountability.</p>		
FR-015	<p>It is desired that the Toll System Provider provide manual processes to associate unspecified funds (i.e. a check without payment coupon or correct account information) to the proper customer account and apply these funds to the proper account.</p>		X
	<p>Note: The Proposer shall describe in this Technical Response Form the complete process including manual efforts required to locate the proper account and apply the funds to that account.</p> <p>Proposer Response:</p> <p><b>Kapsch implements Value-Add FR-015, and this compliance is described below:</b></p> <p>As discussed in FR-013 above, the Kapsch BOS provides a robust search facility that makes it efficient for operations staff to identify accounts. Accounts can be searched by name, address, license plate and other identifying elements permitting the accurately and timely application of payments to the account.</p>		

Req ID	Financial Requirements (Section FR)	Required	Value Add
	<p>Specifically, the Kapsch operations team has developed SOPs that detail the process for posting payments manually, when necessary. Some examples include multiple payments for the same account or customer; re-batch payments which were previously noted as exceptions and researched, and electronic file exception payments. For electronic file exception payments, a report is generated when attempting to post the file. All manual payments are posted in the same manner, but may utilize different payment memo codes and/or payment posting codes.</p> <p>Non-transmittal and check-only transactions are posted using an exception process that requires research to determine appropriate posting of funds. The correct account must be identified before payments can be posted. Based on what data elements are known, the following items can be used to help identify the customer:</p> <ul style="list-style-type: none"> <li>• Number: This is a 6-digit field for reference numbers generated by the BOS</li> <li>• Name: Customer Last Name, Customer First Name (ex: Doe, John)</li> <li>• Account Number</li> <li>• Special: Used to search customer's driver license number, phone number or address</li> <li>• Non-transmittal and check only transactions are posted using an exception process that requires research to determine appropriate posting of funds.</li> </ul> <p>Once the account is found and any over/under calculations have been determined, the funds are posted and properly noted in the BOS.</p> <p>Kapsch's goal is timely and accurate posting of funds to customer accounts which supports both good customer relationships and financial accounting goals.</p>		
FR-016	<p>The Toll System Provider shall safeguard cash deposits and shall provide any necessary or advisable armored car services and other means to secure all cash that is in Toll System Provider's custody or control.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-16 , and this compliance is described below:</p> <p>Securing assets under its control (including cash, transponders, and other items) is one of the key elements of Kapsch's operational guidelines. The Team has implemented, and is currently providing for other customers, SOPs for safeguarding that all cash and check payments made to the CSC and/or walk-up centers (WUC) are prepared for deposit and secured for pick up by courier service and routed to financial institution(s) for deposit. The SOP outlines processes for preparing deposits, chain of custody measures, and depositing funds into vaults until courier pick up. Included in the SOP are the following:</p> <ul style="list-style-type: none"> <li>• Process by WUC agents to secure cash drawers</li> <li>• Securing cash drawer funds in office safe</li> <li>• Count of cash and check funds and recording of totals as part of reconciliation</li> <li>• Preparing deposit of funds in secure counting room under dual control</li> <li>• Placing deposit in tamper-proof money bag once completed</li> <li>• Acknowledgement of receipt by courier as part of chain of custody process</li> </ul> <p>Handling cash transactions carries with it a certain amount of risk. Kapsch's experience has helped it identify those risks and developed specific procedures to minimize those risks and safeguard cash assets as well as customers and staff.</p>		
FR-017	<p>All money paid to the CSC shall be credited into the Custodian Accounts. All customer payments shall be recorded in the TCS within 24 hours of when they are received by the Toll System Provider.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-17 , and this compliance is described below:</p> <p>As discussed in FR-05 and FR-07 above, Kapsch will establish procedures whereby all revenues and funds are either deposited directly or swept to Custodian Accounts on a daily basis, thereby ensuring security for funds. Customer payments and other funds will be processed within the required key performance indicator (within 24 hours of receipt). Payment and reconciliation reporting will be provided to verify the Kapsch's compliance with these requirements.</p>		
FR-018	<p>The Toll System Provider shall process refund requests from customers. Credit card or debit card-based toll accounts shall be refunded to the same card. Cash toll accounts shall be refunded with a check mailed to the address of record on the account.</p>	X	

Req ID	Financial Requirements (Section FR)	Required	Value Add
	<p>Note: The Proposer shall outline in this Technical Response Form its existing refund process including escalation processes for unresolved refund requests and authorization levels.</p> <p>Proposer Response:  Kapsch fully complies with requirement FR-18 , and this compliance is described below:  As discussed in FR-010 above, account closures and refunds will be processed in a manner consistent with the Joint Board's business rules. Refunds for overpayments associated with video-billing and/or violation accounts will require that research is performed to see if there are other unpaid video or violation accounts/transactions for the same customer and, if so, the overpayment will be applied to outstanding transactions, per the business rules. Additionally, the BOS has a configurable period of time to allow for subsequent transactions to post prior to issuing refunds in the event of postpaid accounts or account closures. Once confirmation is received that the refund is owed, the CSR will process the refund to the customer per approved business rules regarding credit/debit card-based accounts and cash/check-based accounts. As appropriate, refunds will be credited to the customer's credit/debit card on file or be issued a check for the confirmed refund amount.  Daily reports will detail outstanding refunds that supervisory personnel will review. Any refunds that are not completed within a timely manner will be researched and resolved by appropriate supervisory personnel.</p>		
FR-019	<p>The Toll System Provider shall provide reports used for accounting and reconciliation of financial data. The reports must address the following functions at a minimum: 1. Cash and all other payments collected at the CSC storefronts and other retail outlets under contract, 2. Account deposits, shortages and overages, 3. Adjustments, 4. Daily reconciliations, customer accounts balances, CSC and VPS activities, tolls collected and tolls posted, images received versus video images processed, 5. Recommended fund transfers, deposits and withdrawals, 6. By CSC for each shift, number of Transaction types, deposits by payment type, cash deposits, low, high and average value, 7. Aggregate account balance activity including beginning-of-day and end-of-day balances, all tolls and fees, and replenishments, and 8. Interoperable account activities for home and away Transactions for Traffic Transactions reconciliation and settlement. Additional financial related reports may be submitted for evaluation.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement FR-19 , and this compliance is described below:  The Kapsch BOS provides an extensive array of reports providing essential visibility into operations. These reports have been demonstrated as effective administrative tools by other toll authority customers that use them for monitoring and managing their operations. BOS reports include a wide range of revenue and reconciliation reports, CSR and account activity reports, and transponder-related reports. In addition, the full suite of violation reports are designed to monitor, manage, enforce, and reconcile violation processing and enforcement activities, and include detailed and summary reports for violations, citations, and enforcement activities such as court action reports. Authorized Joint Board personnel will have access to the reports for ongoing monitoring of operations performance.  Kapsch's BOS shall provide all required reports, including the following reports for the reconciliation of financial data:</p> <ul style="list-style-type: none"> <li>• Payment Processing Reports - Cash and all other payments collected at the CSC storefronts and other retail outlets under contract,</li> <li>• Deposit Reconciliation - Account deposits, shortages and overages,</li> <li>• Reporting Adjustments to toll transactions,</li> <li>• Daily reconciliations, customer accounts balances, CSC and VPS activities, tolls collected and tolls posted,</li> <li>• Recommended fund transfers, deposits and withdrawals,</li> <li>• By CSC/WUC for each shift, number of Transaction types, deposits by payment type, cash deposits, low, high and average value,</li> <li>• Aggregate account balance activity including beginning-of-day and end-of-day balances, all tolls and fees, and replenishments, and</li> <li>• Interoperable account activities for home and away Transactions for Traffic Transactions reconciliation and settlement.</li> </ul>		
FR-020	<p>The Toll System Provider shall interface to an accounting system (provided by the Revenue Control Manager) to support reporting of the cash flow and all resources.</p>	X	
	<p>Note: The Toll System Provider shall submit in this Technical Response Form a summary of data that can be provided by the TCS in a system to system interface</p>		



Req ID	Financial Requirements (Section FR)	Required	Value Add
	<p>(e.g. FTP site) daily to support a financial management system. While the TCS and Accounting System will transmit data, there will be no system to system integration between the accounting system (provided by others) and the TCS, except the file transfer of reconciled data shall be automated in the System.</p> <p>Proposer Response:  Kapsch fully complies with requirement FR-20 , and this compliance is described below:  Please refer to WF-012. The TCS is fully capable of providing electronic files containing journal information for reconciliation. This information can be formatted in numerous ways, and provided by FTP or other transfer mechanism on regular (automated) intervals.</p>		
FR-021	<p>The TCS shall provide for a methodology to batch process refund checks to the third party accounting system or Custodian who disburses revenue.</p> <p>Proposer Response:  Kapsch fully complies with requirement FR-21 , and this compliance is described below:</p> <p>Kapsch will provide a methodology to batch process refunds (both checks and credit cards) via the accounting system or Custodian as described below:  For check refunds, the Kapsch operations team will run a report on a daily basis to determine if any refunds are warranted. The report will list accounts eligible for refund and contain the following information:</p> <ul style="list-style-type: none"> <li>• Customer Name</li> <li>• Address</li> <li>• Account Number</li> <li>• Account Type</li> <li>• Credit Amount to be refunded</li> </ul> <p>This report is forwarded to the Custodian for processing after authorized supervisory staff have reviewed and approved the refund list.  Batch process for credit card refunds will run nightly identifying the accounts that require a refund, creating a file with account information including:</p> <ul style="list-style-type: none"> <li>• Customer Name</li> <li>• Account Number</li> <li>• Credit Card Number (to be refunded)</li> <li>• Credit Card type</li> <li>• Refund amount</li> </ul> <p>This file is then processed through merchant services, posted to customer accounts and posted to appropriate the appropriate ledger accounts in the BOS accounting system.</p>	X	
FR-022	<p>The Toll System Provider shall provide an interface to the accounting system.</p> <p>Note: The Proposer shall provide in this Technical Response Form a list of configurable financial accounting codes that track debits, credits and adjustments and reversals to all payments received in the System, including but not limited to credit cards by type, lockbox, check, and any other payments received in the System.</p> <p>Proposer Response:  Kapsch fully complies with requirement FR-22 , and this compliance is described below:  We currently interface with a number of customer's accounting systems in various fashions, from near real time interfaces to monthly reconciliation of accounts. The TCS has three primary category of codes that track types of activities for interfacing with an accounting system:  Client Code – This identifies the type of transaction in the system. Examples would be a toll transaction, fee transaction, discount transaction or similar. These codes can be nested in a parent – child relationship to improve reporting capability and drill down.  Payment Code – This breaks down how funds are applied to a particular balance of a transaction. Examples would be:</p>	X	

Req ID

Financial Requirements (Section FR)

Required Value Add

- Amount paid to client
- Amount paid to vendor
- Overpayment
- Adjustment
- Credit

Memo Code – This tracks the payment source. Examples would be credit card, cash or walk up payment. An example of a payment transaction with the above information is as follows:

dd_loc	debtor_o	pay_date	amount	paymentcode	memocode	clientcode
16218734	P64029	2012-02-1500:00:00.000	0.57	16	9	CC3201
16218734	P64029	2012-02-1500:00:00.000	0.1	17	9	CC3201
16218737	P66896	2012-03-1600:00:00.000	0.57	16	9	CC3201
16218737	P66896	2012-03-1600:00:00.000	0.1	17	9	CC3201
16218745	P66902	2011-07-1300:00:00.000	0.57	16	9	CC3201
16218745	P66902	2011-07-1300:00:00.000	0.1	17	9	CC3201

These codes can be configured as necessary for the project. While not comprehensive, the following is a sample list of codes utilized:

Client Codes:

5	CTBILL	TOLL BILL PROCESSING FEE
6	CTCONV	CONVENIENCE FEES
7	CTVIO1	VIOLATION FEE
8	CTVIO2	SECOND VIOLATION FEE
9	CTCOLL	FINAL NOTICE FEE
10	CTLEGL	COURT PACKAGE FEE
11	CT3101	183A PARK STREET MAINLINE
12	CT3102	183A BRUSHY CREEK RAMP
13	CT3103	183A BRUSHY CREEK RAMP
14	CT3104	183A LAKELINE MAINLINE NB
15	CT3105	183A LAKELINE MAINLINE SB
16	MSBNSF	MSBNSF-1
27	CT3307	183A CRYSTAL FALLS MAINLINE
28	CT3308	183A SCOTTSDALE DRIVE RAMP NB
29	CT3309	183A CRYSTAL FALLS RAMP NB
30	CT3310	183A CRYSTAL FALLS RAMP SB
31	CTR290	CTRMA 290E VIOLATIONS
32	CT3501	290E US183 RAMP EB
33	CT3502	290E US183 RAMP WB
34	CT3503	290E SPRINGDALE ROAD RAMP EB
35	CT3504	290E SPRINGDALE ROAD RAMP WB

Req ID	Financial Requirements (Section FR)	Required	Value Add																														
	<p>Payment Code Examples:</p> <table border="1"> <tr><td>13</td><td>NSF Reversal</td></tr> <tr><td>19</td><td>Convenience Fee</td></tr> <tr><td>36</td><td>Toll Bill Fee</td></tr> <tr><td>16</td><td>Toll</td></tr> <tr><td>17</td><td>20% Add On</td></tr> <tr><td>18</td><td>NSF Reversal</td></tr> <tr><td>45</td><td>Overpayment</td></tr> </table> <p>Memo Code Examples:</p> <table border="1"> <tr><td>2</td><td>Mail In Check</td></tr> <tr><td>9</td><td>Online Credit Card</td></tr> <tr><td>1</td><td>Walk In Payment</td></tr> <tr><td>5</td><td>Online Check</td></tr> <tr><td>11</td><td>IVR Credit Card</td></tr> <tr><td>10</td><td>IVR Check</td></tr> <tr><td>3</td><td>Online Check</td></tr> <tr><td>7</td><td>Online Credit Card</td></tr> </table>	13	NSF Reversal	19	Convenience Fee	36	Toll Bill Fee	16	Toll	17	20% Add On	18	NSF Reversal	45	Overpayment	2	Mail In Check	9	Online Credit Card	1	Walk In Payment	5	Online Check	11	IVR Credit Card	10	IVR Check	3	Online Check	7	Online Credit Card		
13	NSF Reversal																																
19	Convenience Fee																																
36	Toll Bill Fee																																
16	Toll																																
17	20% Add On																																
18	NSF Reversal																																
45	Overpayment																																
2	Mail In Check																																
9	Online Credit Card																																
1	Walk In Payment																																
5	Online Check																																
11	IVR Credit Card																																
10	IVR Check																																
3	Online Check																																
7	Online Credit Card																																
FR-023	<p>The Toll System Provider shall have financial codes for Traffic Transactions and Financial Transactions that will be transmitted to an external accounting system that separates administrative fees, fines and discounts from the tolls so they can be accounted for separately during reconciliation. All financial codes and associated Transactions shall meet all system availability and data retention requirements.</p>	X																															
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-23 , and this compliance is described below:  As part of its BOS financial accounting system interface to the third-party accounting package, there will be financial codes for toll and financial transactions in order to separately account for administrative fees, fines and discounts from the tolls. All financial codes and associated transactions will meet all system availability and data retention requirements.</p> <p>Our systems currently categorize financial transactions utilizing several different codes. These codes are as follows:  Client Code (Reporting) – Typically used to logically group transactions for reporting purposes. Can also be used to apply certain business rules. Client codes can be in a hierarchy to further enhance reporting capabilities.  Financial ‘buckets’ (Functional) – Used to break down allocations of a particular charge. For example – if a video toll contains an upcharge, it may be desired to have the upcharge in a separate bucket. Likewise it may be desired to divide a toll between the Kentucky and Indiana agencies. As payments are posted, they are applied to these buckets in a particular order and the remaining amounts are recorded.  Payment codes (Functional) – Typically these have a one to one relationship with a financial bucket, meaning that when a payment is posted it will break down into several line items. Each line item will have a separate payment code for each financial bucket the monies are applied to. For example: If you have a \$1 toll transaction that is evenly split between the agencies, you will have \$.50 in a Kentucky bucket and \$.50 in an Indiana bucket. When the \$1 payment is received, you would have two line items with two different payment codes, one for each bucket. These above three are typically tied or organized based on the GL line items in the financial system of the customer.  Memo codes (Reporting) – These are used primarily for miscellaneous reporting reasons. Currently we utilize them primarily for source of funds such as web site credit card, web site ACH, IVR CC, walk in payment, etc.  Deposit codes (Functional) – These are setup primarily for where funds land. If there are separate bank accounts for each authority, we would setup different deposit</p>																																

Req ID	Financial Requirements (Section FR)	Required	Value Add
	<p>codes for each authority and post accordingly.            These codes can be used in combinations to map to general ledger accounts in the financial system of our clients. A cash journal or similar report or interface can then transfer the financial information as needed.            An example set of codes which may be used with this implementation is as follows:</p> <p><b>Client Codes</b></p> <ul style="list-style-type: none"> <li>Grandparent – (LSIORB)               <ul style="list-style-type: none"> <li>Parent                   <ul style="list-style-type: none"> <li>(BRDTCR) Bridge – Downtown Crossing</li> <li>Children – Tolling Points                       <ul style="list-style-type: none"> <li>(BRDTCR01)</li> <li>(BRDTCR02)</li> <li>...</li> </ul> </li> <li>(BREECR) Bridge – East End Crossing</li> <li>(BRKYCR) Bridge – Kentucky...</li> </ul> </li> <li>Fee Parent (ORBFEF)                   <ul style="list-style-type: none"> <li>Children                       <ul style="list-style-type: none"> <li>Statement Fees (ORBFEEST)</li> <li>Late Fees (ORBFEFVF)</li> <li>...</li> </ul> </li> <li>Incentive Parent (ORBINC)                       <ul style="list-style-type: none"> <li>Frequent Driver (ORBINCDF)</li> <li>...</li> </ul> </li> <li>Accounts Parent (ORBACCTS)                       <ul style="list-style-type: none"> <li>Away Agencies (ORBACTAG)</li> <li>Individuals (A1234567) – Alphanumerics allow for 2.8 trillion accounts.</li> <li>Commercial (C0000001)</li> </ul> </li> </ul> </li> </ul> <p><b>Financial Buckets and Payment Codes</b></p> <ul style="list-style-type: none"> <li>• Pre-paid Funds (MoneyBucket1 / 10 for payment, 11 for reversal)</li> <li>• Toll – Kentucky / Indiana (MoneyBucket2 &amp; 3, 12 for payment, 13 for reversal)</li> <li>• Fees – Kentucky / Indiana (MoneyBucket3 &amp; 4, 14 for payment, 15 for reversal)</li> <li>• Upcharge – Kentucky / Indiana</li> <li>• Incentive (negative) – or negative payment posted to account in particular order</li> <li>• MSB Portion of fees (10% dictated in RFP)</li> </ul> <p><b>Memo Codes</b></p> <ul style="list-style-type: none"> <li>• 01 WALK IN PAYMENTS</li> <li>• 02 MAIL</li> <li>• 03 WEB ACH</li> </ul> </li></ul>		

Req ID	Financial Requirements (Section FR)	Required	Value Add
	<ul style="list-style-type: none"> <li>• 99 MISC</li> <li>• 04 WEB CC</li> <li>• 18 IVR ACH</li> <li>• 19 IVR CC</li> <li>• 12 POSTING FILE FROM AWAY AGENCY</li> </ul> <b>Deposit Codes</b> One for each bank account specified by LSIORB		
FR-024	The Toll System Provider shall provide double entry recording for all Financial Transactions in the System.	X	
	<b>Proposer Response:</b> Kapsch fully complies with requirement FR-24 , and this compliance is described below: The proposed TCS incorporates a robust US GAAP-compliant financial accounting system in the BOS with a chart of accounts using standard T-accounts (used for double entry accounting). All financial transactions generate a coordinating journal entry regardless of where the transaction was initiated (roadside, online by the customer, automatic rebills, etc.). The power and flexibility of the BOS financial accounting system readily support US GAAP audits and compliance for all transactions including financial, traffic, and event transactions.		
FR-025	The Toll System Provider shall provide reports that provide the existing debits and credits no less than every 24 hours. All reports shall be automated for delivery and shall be reconciled against the data transmitted to the commercial accounting system (e.g. general ledger) provided by others.	X	
	<b>Proposer Response:</b> Kapsch fully complies with requirement FR-25 , and this compliance is described below: The Kapsch BOS provides an extensive array of financial reports providing essential visibility into operations. These reports have been demonstrated as effective administrative tools by other toll authority customers that use them for monitoring and managing their operations. These reports include a wide range of revenue and reconciliation reports (including reporting on existing debits and credits), CSR and account activity reports, and transponder-related reports. Reports can be run ad hoc or be automated to run at a specific time, such as daily, and can be delivered or be stored in a specified location so that authorized users can retrieve the reports at their leisure and without overloading their e-mail accounts.		
FR-026	The TCS shall provide an audit trail for all Traffic Transactions and Financial Transactions that shows all changes made in the system with respect to the relevant Traffic Transaction and Financial Transactions, including what was changed and by whom (system or non-system user) including a reason for the change if applicable.	X	
	<b>Proposer Response:</b> Kapsch fully complies with requirement FR-26 , and this compliance is described below: The Kapsch BOS capabilities provide consistent operations that facilitate tracking and managing revenues and transactions regardless of operation (WUC, call center, back office, or VPC). Kapsch's understanding of these operations has resulted in comprehensive procedures to manage, safeguard, track, and reconcile revenues and transactions, including tracking changes and providing invaluable audit trails. It should be noted that an important safeguard of the Kapsch BOS is that no transaction can actually be changed. If an account needs to be adjusted, then appropriate subsequent transactions are made by authorized personnel. All transactions are logged by origination (who or what created the transaction), time, date, amount, and (as appropriate) reason or reason code. This transparency and traceability of the Kapsch BOS will provide unparalleled visibility into operations and accounting functions.		
FR-027	Every payment (receivable) in the TCS shall be traceable to payment method, payment type and source of payment.	X	
	<b>Proposer Response:</b> Kapsch fully complies with requirement FR-27 , and this compliance is described below: Every transaction in the TCS, including all payment and financial transactions, shall be logged with origination (who/what created the transaction), time, and date.		


Req ID	Financial Requirements (Section FR)	Required	Value Add
	Financial transactions shall also include the payment method (cash, check, credit/debit card type), and the payment location/source of the payment (WUC, automated rebill, CSC, etc.). This visibility into customer payments provides invaluable information not only for accounting and auditing purposes but also for tracking customer payment habits and preferences.		
FR-028	The TCS shall provide self-balancing, double entry accounting consistent with GAAP.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-28 , and this compliance is described below:  As discussed in FR-024 above, the proposed TCS incorporates a robust US GAAP-compliant financial accounting system in the BOS with a chart of accounts using standard T-accounts (used for double entry accounting). All financial transactions generate a coordinating journal entry regardless of where the transaction was initiated (roadside, online by the customer, automatic rebills, etc.). The system is self-balancing and is 100% reconcilable at any point in time. The power and flexibility of the BOS financial accounting system readily support US GAAP audits and compliance for all transactions including financial, traffic, and event transactions.</p>		
FR-029	The Toll System Provider shall provide functionality to support home or away interoperable Traffic Transactions processed by the Roadside System. The TCS shall process all types of Traffic Transactions including but not limited to ETC, Unregistered Video, and registered video Traffic Transactions.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-29 , and this compliance is described below:  The Kapsch TCS will process a number of traffic transactions. These include:</p> <ul style="list-style-type: none"> <li>• E-ZPass transactions, either home or away, via valid transponder and license plate lists maintained via the current E-ZPass interoperable standards, and</li> <li>• Video/license plate transactions, either transactions associated with a registered/pre-paid account, or unregistered accounts</li> </ul> <p>Each transaction is assigned a unique sequence number and transmitted from the roadside to the BOS using guaranteed messaging to ensure that all transactions are captured and processed. Any discrepancy in the sequence numbers generates an alert for investigation and resolution. Any traffic transaction that is incomplete or has an anomaly is flagged for investigation and resolution.</p> <p>The BOS transaction processing subsystem is responsible for the application of business logic to transactional information to determine proper assignment to Customer Accounts, Interoperability (IOP) Accounts, Video Billing or Violations Accounts.</p> <p>The Kapsch TCS has proven to be an accurate, high volume solution that will meet the Joint Board's transaction processing requirements both now and well into the future.</p>		
FR-030	The TCS shall provide adjustments and reversals to support refund processing to accounts for the disbursement of money to customers, States' Parties, interoperable agencies, and external service providers, including but not limited to the lockbox provider, collection agency and credit card payment processors.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-30 , and this compliance is described below:  Both the robust features of the Kapsch BOS and the SOPs used by the operations team will support refund processing per the business rules and E-ZPass requirements. Refunds can be initiated by authorized personnel and may be made to customers, to States' Parties, interoperable agencies, and outside providers including the lockbox provider, merchant/credit card services, and collection agencies.</p> <p>In the case of closed accounts, there is a configurable delay between the time the account is closed and when any remaining funds are eligible for refund in order to let any outstanding transactions post to the account. Once an account is closed and the time delay has elapsed, the system automatically generates a refund request for any remaining funds on the account.</p> <p>Other disbursements are initiated by adjustments made by authorized personnel to meet the requirements of E-ZPass agencies and outside service providers as well as address the requirements of the States' Parties. All accounts are modified by adjusting transactions (no transactions can be deleted). Each transaction is logged by origination, time, date, amount, and reason. Certain adjustments can be limited to supervisory personnel.</p> <p>The Kapsch operations team will follow approved SOPs and business rules for processing refunds, whether scheduling transfers between agencies and/or States'</p>		

Req ID	Financial Requirements (Section FR)	Required	Value Add
	Parties or physically having checks issued.		
FR-031	The Toll System Provider shall issue refund checks for overpayments of prepaid ETC Accounts or Registered Video Accounts that are closed or inactive (after a configurable time period) to customers. The TCS shall automatically change an account status to closed or inactive when there has been no activity for a configurable (from 0 to 999 days) number of days.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-31 , and this compliance is described below:  As discussed in FR-030, once an account is closed by the customer or through being deemed inactive (after a configurable period), the system will generate a refund request for any remaining funds on the account. Accounts that have been established with a credit card will have the refund applied to the credit card on file. Accounts that were paid by cash or check will be refunded by checks.  There is a configurable delay between the time the account is closed and when any remaining funds are eligible for refund in order to let any outstanding transactions post to the account. Once an account is closed and the time delay has elapsed, the system automatically generates a refund request for any remaining funds on the account.</p>		
FR-032	The Toll System Provider shall describe how unclaimed property is handled within the System for in-active accounts with one (1) year or more of no activity. The inactivity period shall be configurable.	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-32 , and this compliance is described below:  The Kapsch BOS and the operations team's SOPs support the identification and processing of accounts eligible for escheatment, based on escheatment schedules that are defined by the appropriate state statutes. Escheatment normally occurs when a refund has been made for a closed account and the refund has been returned due to the recipient moving (in the case of a check) or the credit card account being closed or expired (in the case of credit card refunds). The operations team will pursue a number of inquiries to determine current information for the owner of the funds before the one-year escheatment timeframe begins. On a regular basis, files are generated for accounts that meet the escheatment criteria (have been held for one year) and forwarded to the appropriate state treasurer or comptroller's office for processing. This file will also be provided to the Joint Board for their review and records.</p>		
FR-033	All funds received from all payment sources external to the TCS shall be provided to the Joint Board on a gross basis unless an approved external vendor does not support gross payment remittance. If an external vendor(s) does not support gross payment remittance, the Toll System Provider shall provide a separate transaction record that clearly itemizes gross revenue and all deductions therefrom made by the external vendor(s).	X	
	<p>Note: The Proposer shall describe all such instances and the associated fees, which shall be on an actual cost basis only.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-33 , and this compliance is described below:  We will support the LSIORB in the manner stated. We have both gross and net clients currently, so can support both methods of funding. MSB will deposit all funds into the account of LSIORB's choosing.  The Kapsch Team through the BOS integrated financial system will account for all funds received from external vendors. The transaction will be recorded as a gross payment remittance with separate transactions detailed for any deductions that were made by the vendor. All funds relating to the payment are deposited into either the Custodian Accounts or a sweep account that is swept to the Custodian Accounts on a nightly basis or as otherwise directed by the Joint Board.  Kapsch shall also require that all payments from external vendors shall be remitted as gross payments as well.</p>		
FR-034	The Toll System Provider shall accept MasterCard, Visa, and American Express.		
	<p>Note: The Proposer shall indicate any others credit card types that it can accept in its Technical Response Form.</p> <p>Proposer Response:</p> <p>Kapsch fully complies with requirement FR-34 , and this compliance is described below:</p>		

Req ID	Financial Requirements (Section FR)	Required	Value Add
	<p>Kapsch, through the BOS integrated financial system will account for all funds received from external vendors. The transaction will be recorded as a gross payment remittance with separate transactions detailed for any deductions that were made by the vendor. All funds relating to the payment are deposited into either the Custodian Accounts or a sweep account that is swept to the Custodian Accounts on a nightly basis or as otherwise directed by the Joint Board. It is anticipated that these payments will be from third-party retailers who may deduct their commission, packaging fees, or other costs prior to remitting payment. All funds and deductions will be fully accounted for and traceable within the BOS financial accounting system. Our integrated financial system currently accepts MasterCard, Visa, and American Express.</p>		



**Access Control and CCTV Requirements**

Access Control and CCTV Requirements (Section AC)		
Req ID		Required Value Add
	<b>Access Control Requirements</b>	
AC-001	The Toll System Provider shall provide an access control system for all the Roadside System cabinets provided by the Toll System Provider. The access control system shall be a card system that provides restricted access for the Toll System Provider staff. The Joint Board staff shall be provided 10 cards for access, but Toll System Provider is anticipated to be the only entity that will access the Roadside System cabinets.	X
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement AC-001 , and this compliance is described below:                      Kapsch has provided security and access control systems as a matter of course for its electronic toll collection systems and we ensure security at customer service locations with access control as a cornerstone of their overall approach to security.                      Physical security and access control is a cornerstone of Kapsch tolling solutions. Equipment cabinets and facilities are locked and monitored continuously via remote surveillance cameras. TCS WAN connections are terminated inside lock cabinets with inter-site communications via dedicated encrypted links. Access is restricted to authorized personnel and physical entry and exit are automatically logged and traceable back to the authorized person. Sensors are mounted at gantry level out of easy reach of vandals and alarms are generated with the MOMS if they are tampered with.                      The Access Control and Monitoring Subsystem (ACAMS) within the Toll Collection System is separate from other TCS functions and implements the access control and monitoring of all TSP equipment cabinets at locations within the Roadside System. Cabinet and other restricted doors are will all be equipped with sensors that record each open and close event. In addition, when a door event occurs, the system will automatically move the PTZ gantry location video camera to the appropriate view to record of who is accessing a specific TSP cabinet or TSP building location.                      For Kapsch toll system installations at the LBJ Express (IH-635 &amp; I-35) and North Tarrant Expressway (IH-820), both of which are in the greater Dallas area, and Australia Airport Link (for Transurban), proximity cards are also used to limit access to authorized personnel and to record the time and person for each authorized access. This will be done as well for outdoor TSP cabinet access points and TSP building entry/exit points at toll locations Changeable Message Sign (CMS) locations Walk-Up Centers and the Technical Operations Center.                      Access controls at the hosted BOS locations are comparable to those described above will adhere to the Kapsch standard policies which are summarized below:</p> <ul style="list-style-type: none"> <li>• We use proximity cards for facility access. This is a role based system that records entry and egress for the buildings.</li> <li>• Kapsch will provide the LSIORB badges upon request.</li> <li>• Access for LSIORB staff will be set according to established protocols.</li> </ul>	
AC-002	The Toll System Provider shall provide setup, install and configure a CCTV pan title zoom camera and all data communications to monitor the equipment cabinets. The Toll System Provider shall trigger CCTV events for recording and pre-sets to position camera at the point of alarm.	X
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement AC-002 , and this compliance is described below:                      There are three separate CCTV systems provided by the Toll System Provider (TSP) serving three separate purposes:</p> <ul style="list-style-type: none"> <li>• Monitoring the displayed toll rates on the toll rate signs</li> <li>• Monitoring physical access to toll equipment and locations</li> <li>• Auditing the creation of Traffic Transactions by observing corresponding vehicle movements under the toll gantries</li> </ul> <p>AC-002 is interpreted to apply to the CCTV cameras used for monitoring physical access.</p> <div style="text-align: center;">  </div> <p>Figure 9-1 Security Access PTZ Cameras</p>	

Access Control and CCTV Requirements (Section AC)			Required	Value Add
Req ID				
	<p>Previous Kapsch deployments at Dallas LBJ and NTE facilities, and a several NYSTA toll facilities, use an access control and monitoring system (ACAMS) system such as the described above to monitor cabinet access and to create alarms within the MOMS system if access is attempted when not expected. One example is shown below: A continuous H.264 video stream from each ACAMS camera is routed back to the Toll Operations Center. These streams are recorded and stored in the DVR. This allows authorized personnel of the Operations Center to monitor recorded video either in real-time or playback.</p>			
AC-003	<p>The Toll System Provider shall track data and provide reports showing entry and exit times for facilities, secure areas, toll equipment and other devices requiring secure access. If a door is not closed within a preset time (configurable) an alarm shall be generated by the access control system.</p>	X		
	<p>Proposer Response: Kapsch fully complies with requirement AC-003 , and this compliance is described below: The Access Control and Monitoring System includes access to building doors at facilities such as Walk Up Centers, Toll Operations Center, Facility Host / BOS sites and all the roadside equipment roadside cabinets. In addition to the visual monitoring by personnel at the Toll Operations Center, entry and exit on all doors is automatically logged and reported within the Maintenance and Online Management System (MOMS). The system will be configured to generate alarms when a scheduled entry and exit event do not occur as planned. It also generates alarms when entry has occurred but the time from entry to exit exceeds a configurable parameter. Reports on access intervals and times by personnel and by location are generated from within the MOMS system and provided as part of the standard reporting to the Joint Board as part of on-going Operation &amp; Maintenance activities. An example of these reports for a previous Kapsch Toll System installation at LBJ in the Dallas area is shown below. Access controls at the hosted BOS locations are comparable to those described above and will adhere to MSB standard policies. These are summarized below: Our system provides logging of all proximity card reads. All areas that contain assets such as transponder inventory or monetary instruments are also under video surveillance at entry / exit points and video can be reviewed. The facility is monitored by a third party security company and doors that are not closed within a certain timeframe trigger an alarm. Also motion and sound will trigger alarms when the system is armed.</p>			
AC-004	<p>The Toll System Provider shall provide an Access Control System with the capability for authorized users to manage user roles, including but not limited to: create new roles, assign and un-assign users to roles, adjust roles, deactivate roles; and, in general, control all rights within the System through the assignment of user roles.</p>	X		
	<p>Proposer Response: Kapsch fully complies with requirement AC-004 , and this compliance is described below: Within the Kapsch TCS, personnel with suitable credentials will have ability to manage the extent of each authorized user's role and access privileges. Key card access to building entry/exit points and to toll equipment cabinets can be restricted where appropriate, and permissions to login to, view and/or modify data within the system can be selectively granted or removed. The system will also permit new authorized users to be created or deleted as needed to properly manage the toll collection system over the full Operation &amp; Maintenance contract term. This level of security provides assurance that only authorized staff can control all rights within the system.</p>			
AC-005	<p>The Toll System Provider shall utilize an existing Access Control System for the CSC with additional staff or roles added for the Project. The Toll System Provider shall have an Access Control System for the Walk-up Centers that provides for key or access card access to the Walk-up Centers. The Toll System Provider shall make available Access Control System audit reports on-demand, including but not limited to: 1) logged activity by activity type; 2) logged activity by user accounts; and 3) logged activity by user.</p>	X		
	<p>Proposer Response: Kapsch fully complies with requirement AC-005 , and this compliance is described below: Please see AC-003, Kapsch will utilize the same systems for walk up centers that is utilized at the CSC. All access control will be identical to our current facilities.</p>			

Access Control and CCTV Requirements (Section AC)		
Req ID		Required Value Add
	<b>CCTV</b>	
AC-006	The CCTV roadway cameras shall be used for observation, to audit traffic as it passes the Roadside System, and to monitor Toll Zones and toll equipment sites for security purposes.	X
	<p>Proposer Response: Kapsch fully complies with requirement AC-006 , and this compliance is described below: There are three separate CCTV systems provided by the Kapsch Team serving three separate purposes:</p> <ul style="list-style-type: none"> <li>Monitoring the displayed toll rates</li> <li>Monitoring physical access to toll equipment and locations</li> <li>Auditing the creation of Traffic Transactions by observing corresponding vehicle movements under the toll gantries</li> </ul> <p><b>Monitoring Displayed Toll Rates</b> Roadway CCTV cameras are positioned to permit continuous TSP monitoring of the displayed toll rates at the Changeable Message Signs on the approaches to each toll zone. In addition to this default CCTV orientation, it is possible for authorized personnel to use the cameras for observation and to audit traffic passing that location.</p> <p><b>Monitoring Access to Equipment and Facilities</b> Separate CCTV cameras are used by the TSP for monitoring access to the TSP cabinets at the tolling point and at TSP facilities at other locations within the Toll Collection System (TCS).</p> <p><b>Auditing the Creation of Traffic Transactions</b> Separate Overview/Digital Video Audit System (DVAS) CCTV cameras are provided at the toll gantries for explicit use in auditing vehicle movements through the toll zone in concert with the subsystem transactions and Traffic Transactions that are caused by those vehicle movements.</p>	
AC-007	CCTV video shall have the following Transaction data correlated to the video: 1) The live feed of the CCTV roadway camera shall be available to the CSC; 2) The Transactions shall be indexed to the roadway overview camera for auditing; 3) The CCTV roadway overview cameras and recordings shall require separate identification and password authentication requirements from those of the CCTV site security cameras and recordings, and 4) CCTV video shall include timestamp common to the time base of the TCS.	X
	<p>Proposer Response: Kapsch fully complies with requirement AC-007 , and this compliance is described below: There are three separate CCTV systems provided by the Kapsch Team serving three separate purposes:</p> <ul style="list-style-type: none"> <li>Monitoring the displayed toll rates</li> <li>Monitoring access to secured equipment and locations</li> <li>Auditing the creation of Traffic Transactions by observing corresponding vehicle movements under the toll gantries</li> </ul> <p>AC-007 is interpreted as stating requirements for the Digital Video Audit System (DVAS) / Overview cameras and how they must be managed separately from the Access Control and Monitoring Subsystem (ACAMS) cameras.</p> <p><b>1) Access to the Live DVAS/Overview Camera Feeds</b> The DVAS/Overview cameras are networked and the live video feed is available to TSP and other LSIORB-authorized personnel to view at the CSC, or the TOC or any other location that is suitable while auditing the system by comparing vehicle movements under the toll gantries with the Traffic Transactions created from them.</p> <p><b>2) Overlay of Transaction Data on DVAS/Overview Camera Feeds</b> The DVAS/Overview camera video stream is recorded on a DVR at the toll zone that is time-synchronized with all of the other elements of the TCS. Authorized users can replay the DVAS video stream from the DVR and similarly time-stamped transaction data is superimposed on the video at the toll zone and transmitted</p>	

Access Control and CCTV Requirements (Section AC)		
Req ID		Required Value Add
	<p>with the video stream for use by all authorized remote users. The DVAS DVR and camera are both located at the toll zone and are connected to the TCS WAN via the high-availability edge switch. It is independent of the other equipment at the toll zone and access to the DVAS video stream is not dependent on the other equipment being operational.</p> <p><b>3) User Access Controls for DVAS/Overview Cameras</b>  All access to the Digital Video Auditing Subsystem (DVAS) / Overview cameras is routed through the access control layer within the Back Office System and is restricted to those with ORB-approved access to that system function.  The Access Control and Monitoring (ACAMS) cameras used by local physical access monitoring at the toll zone are accessible through the MOMS system by TSP and ORB-authorized personnel whose access credentials have been set to include the ACAMS cameras accessible via the TCS Wide Area Network.  The access layer in the Back Office System distinguishes between these two separate CCTV systems and manages their user access credentials separately.</p> <p><b>4) CCTV Timestamp</b>  The CCTV video stream shall contain a timestamp which is synced to the common time of the entire Toll Collection System. This will be displayed on all video captured out of the CCTV subsystem.</p>	
AC-008	It is desired for the live feed of the CCTV roadway camera to be available to the Walk-up Centers.	X
	<p>Proposer Response:  <b>Kapsch implements Value-Add AC-008, and this compliance is described below:</b>  There are three separate CCTV systems provided by the Toll System Provider (TSP) serving three separate purposes:</p> <ul style="list-style-type: none"> <li>Monitoring the displayed toll rates</li> <li>Monitoring access to secured equipment and locations</li> <li>Auditing the creation of Traffic Transactions by observing corresponding vehicle movements under the toll gantries</li> </ul> <p>Walk Up Center locations will have Internet access and will be able to connect to networked CCTV cameras within the TCS subject to user privileges set in the access layer in the Back Office System. At the Walk Up Center, a staff member with appropriate access credentials can login and display the appropriate CCTV video feed.</p> <p>None of the three CCTV systems within the TCS are presently intended for public viewing but rather for use by authorized TSP and LSIORB personnel and LSIORB-authorized auditors when performing the three functions identified above. Those authorized to monitor physical security may access the ACAMS cameras through the Internet and the BOS access control layer from many locations including either Walk Up Center location. Those authorized to perform audits on toll zone creation of Traffic Transactions, may access the DVAS cameras and DVRs from many locations via the Internet and the BOS access control layer, including from either Walk Up Center locations.</p>	
AC-009	Fixed (not Pan-Tilt-Zoom) CCTV cameras shall provide full coverage for observation of all traffic lanes in each Toll Zone. Pan-Tilt-Zoom CCTV cameras shall be mounted in such locations that the full Toll Zone and toll equipment is visible by the CCTV camera. All CCTV cameras for roadway overview and site security shall record to a digital video recorder for motion video storage. The CCTV cameras shall record periods of inactivity at lower frame rates or resolution than the normal settings, and shall have a viewable image on a 24 hour per day, 7 day per week basis. The CCTV camera shall provide a continuous capture of the tuned field of view.	X
	<p>Proposer Response:  Kapsch fully complies with requirement AC-009 , and this compliance is described below:  There are three separate CCTV systems provided by the Toll System Provider (TSP) serving three separate purposes:</p> <ul style="list-style-type: none"> <li>Monitoring the displayed toll rates</li> <li>Monitoring access to secured equipment and locations</li> <li>Auditing the creation of Traffic Transactions by observing corresponding vehicle movements under the toll gantries</li> </ul> <p><b>Pan/Tilt/Zoom Control for Observation of the Toll Zone</b>  This portion of AC-009 is interpreted as applying to the CCTV cameras used for monitoring physical access to equipment and cabinets. It is important to have one</p>	

Access Control and CCTV Requirements (Section AC)		
Req ID		Required Value Add
	<p>camera at each toll zone that can be used to ensure that no portion of the tolling region goes unobserved. The CCTV cameras used to monitor the toll rates are fixed and pointed at the toll rates signs. The CCTV cameras used for monitoring physical access to the cabinets and toll equipment are have pan/tilt/zoom capability and are normally pointed at the entry and exit points they are intended to be monitoring. Every group of three Equipment Lanes has its own CCTV camera used for auditing the creation of Traffic Transactions and they are intentionally positioned to provide a wide view of the entire region where tolling operations occur. These cameras are fixed in order to provide a consistent record of lane activity used for auditing purposes</p> <p><b>DVR Recording and Storage</b>  This portion of AC-009 is interpreted as applying to both the CCTV cameras used for monitoring physical access and the CCTV cameras used for auditing the creation of Traffic Transactions  The CCTV cameras used auditing the creation of Traffic Transactions are continuously recorded to a DVAS DVR at the toll zone.  The CCTV cameras used for monitoring physical access at TSP facilities, including the toll zone, provide a continuous video stream through the dedicated TCS WAN links to the Toll Operations Center where these streams are recorded on a DVR.  The CCTV cameras used for monitoring the displayed toll provide a continuous video stream back to the Facility Host / BOS site where it is confirmed that changes in toll rates are being correctly displayed. These video streams use a lower rate since displayed toll rates change infrequently. They are recorded to DVR at the Facility Host / BOS location.</p> <p><b>Frame Rates and Availability</b>  Cameras in all three CCTV systems are network accessible and can be viewed at any time, 24 hours a day, 7 days a week, by authorized personnel via the Internet and the access control layer in the TCS Back Office.  The DVAS / Overview video streams are stored on an EnduraXpress DVR at the toll zone. It is configured to store periods of inactivity at a lower frame rate so that all relevant activity is recorded during busy time periods and DVR recording time is extended during periods of inactivity.  Cameras for the three different CCTV Systems are configured to provide video streams at the frame rates indicated below.</p> <ul style="list-style-type: none"> <li>• Monitoring toll rates: 30 fps</li> <li>• Auditing the creation of Traffic Transactions: 30 fps</li> <li>• Monitoring physical access (ACAMS): 10 fps</li> <li>•</li> </ul>	
AC-010	<p>The CCTV cameras provided by the Toll System Provider shall be color digital cameras supporting a minimum resolution of 720 vertical lines. The CCTV camera shall be a proven commercial product with a second source that can be expanded or updated, in a modular fashion, over time, applicable to both Hardware and Software without modification to any portion of the TCS. The CCTV camera shall provide clear video in both normal day and night conditions, and adjust for poor light conditions.</p>	X
	<p>Proposer Response:  Kapsch fully complies with requirement AC-010 , and this compliance is described below:  There are three separate CCTV systems provided by the Toll System Provider (TSP) serving three separate purposes:</p> <ul style="list-style-type: none"> <li>• Monitoring the displayed toll rates</li> <li>• Monitoring access to secured equipment and locations</li> <li>• Auditing the creation of Traffic Transactions by observing corresponding vehicle movements under the toll gantries</li> </ul> <p>The CCTV cameras used for monitoring the displayed toll rates will be Pelco IXE20DN12-EAD.  The CCTV cameras used for monitoring access to secured equipment and locations will be CohuHD 3920-HD24-1000. One of the features of this camera is its ability to automatically adjust to provide clear video during both daylight conditions and nighttime conditions with poor lighting.  The DVAS CCTV cameras used for auditing the creation of Traffic Transactions at the toll zone will be Pelco IXE20DN12-EAD.</p>	

Access Control and CCTV Requirements (Section AC)		
Req ID		Required Value Add
AC-011	CCTV cameras and all of the associated electronic equipment shall be housed in a weatherproof NEMA rated enclosure and be protected against vandalism and mounted out of physical reach.	X
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement AC-011 , and this compliance is described below:            There are three separate CCTV systems provided by the Toll System Provider (TSP) serving three separate purposes:</p> <ul style="list-style-type: none"> <li>Monitoring the displayed toll rates</li> <li>Monitoring access to secured equipment and locations</li> <li>Auditing the creation of Traffic Transactions by observing corresponding vehicle movements under the toll gantries</li> </ul> <p>The housings for the cameras used for all three CCTV systems are rated to NEMA IP67. All cameras will be mounted at gantry height and out of reach from the ground, helping assure protection from vandalism.</p>	
AC-012	The CCTV camera and associated digital video recorder (DVR) shall include an administrative application at the toll facility host which shall enable authorized managers to determine access authorizations and CCTV settings. The CCTV system shall configure the CCTV network recordings, data, all other network settings, and events based on motion detection in the field of view or other event triggering, for a configurable number of seconds before and after the event, and shall allow playback, such that configurable specific fields of data are only visible by specific categories of users.	X
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement AC-012 , and this compliance is described below:            The EnduraXpress Integrated Recording and Management Platform is a full-featured system that supports these capabilities. The EnduraXpress system is currently utilized in our LBJ-NTE project for DVR storage and playback. This system provides all the needs of the LSIORB system, such as authorized user management and CCTV configuration.</p>	
AC-013	The CCTV camera DVR and associated Hardware shall be time synchronized with the TCS and CCTV cameras, and applications shall remain in operation and continue recording when the communications fail, such as a failure of any Roadside System equipment.	X
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement AC-013 , and this compliance is described below:            The DVRs and CCTV cameras all obtain network time via TCP/IP. Network time will be distributed from the BOS to each Toll Zone Controller and from each Toll Zone Controller to all IP accessible items within the toll zone that request it via NTP.            The DVAS cameras and DVR are directly accessible through the high-reliability edge switch at the toll zone and are not dependent on the correct operation of any other toll zone equipment. They will remain in operation during any communications link failure.</p>	
AC-014	CCTV Cameras shall detect movement for specific zones near cabinets or building doors. CCTV cameras have the capability to be aimed in any of 360 degrees of direction and 180 degrees of tilt, with a zoom capability of ten times.	X
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement AC-014 , and this compliance is described below:            There are three separate CCTV systems provided by the Toll System Provider (TSP) serving three separate purposes:</p> <ul style="list-style-type: none"> <li>Monitoring the displayed toll rates</li> <li>Monitoring access to secured equipment and locations</li> <li>Auditing the creation of Traffic Transactions by observing corresponding vehicle movements under the toll gantries</li> </ul> <p>AC-014 is interpreted as applying to the CCTV cameras used for monitoring physical access.            The CCTV cameras used for monitoring physical access will be CohuHD 3920-HD24-1000which can pan through 360°, tilt from nadir to +5°, and zoom up to 10x</p>	
AC-015	The Toll System Provider shall provide a digital video recorder to record the CCTV camera video. Authorized users shall access and query the DVR to search video by date, time and location.	X
	Proposer Response:	

Access Control and CCTV Requirements (Section AC)		
Req ID		Required Value Add
	<p>Kapsch fully complies with requirement AC-015 , and this compliance is described below:  There are three separate CCTV systems provided by the Toll System Provider (TSP) serving three separate purposes:</p> <ul style="list-style-type: none"> <li>Monitoring the displayed toll rates</li> <li>Monitoring physical access to toll equipment and locations</li> <li>Auditing the creation of Traffic Transactions by observing corresponding vehicle movements under the toll gantries</li> </ul> <p>AC-015 is interpreted as applying to the CCTV cameras used for monitoring physical access and the CCTV cameras used for auditing the creation of Traffic Transactions in the lane.  The video streams from the CCTV cameras used for auditing the creation of Traffic Transactions in the lane are recorded to an EnduraXpress DVR system that is located at the toll zone. Authorized users can access that DVR remotely and can search the video by data, time and location.  The video streams from the CCTV cameras used for monitoring physical access are routed through the network to the Toll Operations Center for direct viewing by TSP personnel. They are recorded to an EnduraXpress DVR system at the Toll Operations Center. Authorized users can access and query that DVR over the network and can search by date, time and location.</p>	
AC-016	The DVR shall be configurable to provide a range of recording frames per second and shall be write-protected to prevent anyone from altering the recording. All video recordings shall be accessed within two (2) seconds of a request to review the video and the DVR shall store sixty (60) days of recording on the DVR and be configurable between one (1) and sixty (60) days.	X
	<p>Proposer Response:  Kapsch fully complies with requirement AC-016 , and this compliance is described below:  The Kapsch Team will provide EnduraXpress DVRs include the security features described above and are immediately accessible over the network by authorized viewers. As stated above in AC-012, this system is more than capable of meeting all the LSIORB DVR requirements.</p>	
AC-017	Authorized users on the TCS network shall be able to access, open and display cameras on a personal computer through a DVR application provided by the Toll System Provider. The Toll System Provider shall provide VPN access for users to remotely access the TCS network. The authorized user shall access the DVR through the network to play back previously recorded video with selected lane activity data for review.	X
	<p>Note: It is expected that the Toll Operations Center staff and the Joint Board will be the primary users of these videos.</p> <p>Proposer Response:  Kapsch fully complies with requirement AC-017 , and this compliance is described below:  The EnduraXpress DVR system provides a DVR application permitting remote users to fully exercise the CCTV system.  The Kapsch TCS provides remote users to access the TCS through Virtual Private Network (VPN) connections to the TCS Back Office. The access control layer at the TCS Back Office determines what parts of the TCS each remote user has access to.  Users with appropriate credentials set at the BOS access control layer can access the DVRs through the network to play previously recorded video for the locations and lanes they select.</p>	
AC-018	The DVR shall enable an authorized user to copy, save, and print segments of recorded data as images or full-motion video and to crop and alter those copies if necessary without altering the original. The DVR recordings shall all be in one industry standard open format for recording and displaying live streaming video and full-file downloads. The DVR shall automatically purge CCTV data not marked for archive after a configurable period of time, with the default set at 60 calendar days. The DVR shall provide the ability to automatically archive alarm events and other designated critical events regardless of purge cycle.	X
	<p>Proposer Response:  Kapsch fully complies with requirement AC-018 , and this compliance is described below:  The Kapsch TCS uses the EnduraXpress Integrated Recording and Management Platform as the DVR at each toll zone for recording video from CCTV cameras used for auditing the creation of Traffic Transactions in the lane.  The Kapsch TCS uses the EnduraXpress Integrated Recording and Management Platform as the DVR at the Toll Operations Center for recording video from CCTV cameras used for monitoring physical access to TSP equipment and locations.  The EnduraXpress Integrated Recording and Management Platform provides a full suite of features for managing these types of applications. It has been previously</p>	

Access Control and CCTV Requirements (Section AC)		
Req ID		Required Value Add
	used by Kapsch for this purpose at the LBJ Expressway.	
AC-019	Toll System Provider shall provide CCTV and DVR report(s) that include but are not limited to the following information: 1) user access to the CCTV camera system including date and time stamp and camera name; 2) firmware version and date, and 3) camera and DVR configuration. It is expected that these reports are commercially available from these devices.	X
	Proposer Response: Kapsch fully complies with requirement AC-019 , and this compliance is described below: The EnduraXpress Integrated Recording and Management Platform supports these capabilities.	
AC-020	It is desired that the CCTV system utilize the latest applicable version of NTCIP 1205 - Object Definitions for Closed Circuit Television (CCTV) Camera Control.	X
	Proposer Response: <b>Kapsch implements Value-Add AC-020, and this compliance is described below:</b> The Kapsch TCS will use a CCTV camera and DVR combination that is currently installed and operational in a Traffic Control Center in North Texas, as part of our installation at LBJ (H-636 & I-35) and Dallas NTE (H-820).	
AC-021	The Toll System Provider shall provide CCTV maintenance to satisfy Mean Time Between Failures(MTBF) – of 10,000 hours based on continuous operations of 24 hours a day 7 days a week usage.	X
	Proposer Response: Kapsch fully complies with requirement AC-021 , and this compliance is described below: Personnel from the local Technical Operations Center will provide maintenance for the Roadway ITS CCTV cameras, ACAMS CCTV cameras used to monitor cabinet / building access, and the DVAS/Overview cameras used for auditing the creation of Traffic Transactions at the toll zone. The cameras will be inventoried in the MOMS system which will also be used to track maintenance activities and calculate MTBF. The cameras selected by Kapsch for the project were chosen for their reliability and known MTBF attributes.	
AC-022	The CCTV system shall be sized such that a minimum of ten (10) concurrent users may use the system without degradation of the system.	X
	Proposer Response: Kapsch fully complies with requirement AC-022 , and this compliance is described below: The EnduraXpress Integrated Recording and Management Platform supports more than 10 concurrent users and the network connections between remote users and the DVRs have been sized to take 10 concurrent CCTV system users into account.	



**TCS Workflows**

<b>Work Flows (Section WF)</b> <b>All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.</b>			<b>Required</b>	<b>Value Add</b>
<b>Req ID</b>				
WF-001	<b>Transaction Creation and Processes</b> The Toll System Provider shall provide System functionality to process Transactions that are created at the Roadside System and sent to a BOS.		X	
	Note: The Proposer shall describe in this Technical Response Form all data available in the System, and specify configurable data available in the System. The system and operations work flows shall also demonstrate traceability of Traffic Transactions and Financial Transactions within the System from the Roadside System into the BOS. Proposer shall describe in this Technical Response Form the toll rate design within this workflow. If the toll rating is conducted outside of this work flow, Proposer shall state where the rating is done in the TCS. The Proposer shall describe in this section of the Technical Response Form the toll rating functions and configurability of the toll rating functions regardless of where it resides in the TCS architecture. The Proposer shall describe in this Technical Response Form all operational configurable parameters and system configurable parameters that impact operations.			
	Proposer Response: [Redacted]			

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

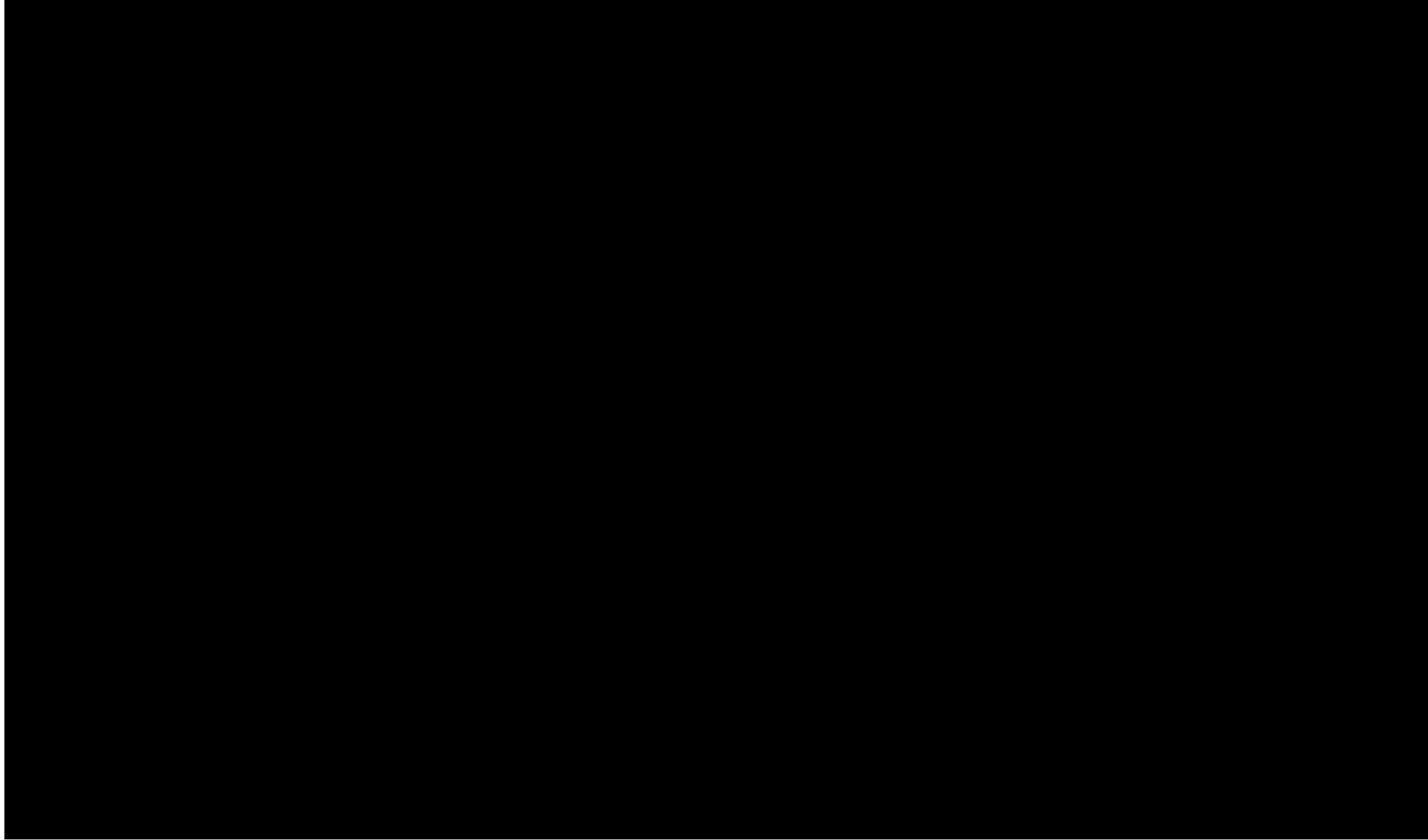
Req ID			Required	Value Add

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

**Req ID**



**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

**Req ID**



[Redacted content]

[Redacted content]

[Redacted content]

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

**Req ID**

Req ID		Required	Value Add
	<p>[Redacted content]</p>		

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

Req ID		Required	Value Add
	<div style="background-color: black; width: 100%; height: 100%; min-height: 500px;"></div>		
WF-002	<p><b>Transaction payment processing and settlement</b>                      The Toll System Provider shall provide system functionality and operations processes to process Transaction payments and settlements on all account types.</p>	X	
	<p>Note: Transactions are paid from the account and settled with home or away agencies as paid, closed or escalated for further notice of payment required. The Proposer shall describe in this Technical Response Form the transaction payment process and settlement work flow, and shall include in such description how partial payments are handled and how exceptions for unpaid or failures to process in the System are identified and resolved for a Transaction. The Proposer shall provide in this Technical Response Form a list of exceptions of payment processing and posting. Examples include a bad credit card on file or how an insufficient payment would escalate to the Violation process. The Proposer shall describe in this Technical Response Form all operational configurable parameters and system configurable parameters that impact</p>		

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

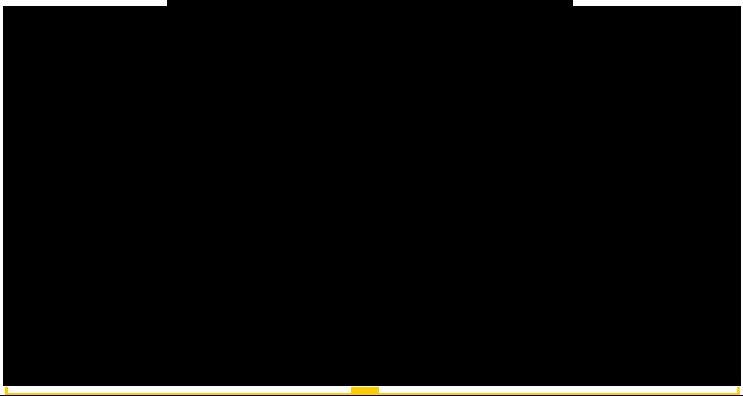

**Required Value Add**

**Req ID**

operations.

Proposer Response:

[Redacted Proposer Response]

Work Flows (Section WF)			Required	Value Add
Req ID	All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.			
				
WF-003	<p><b>Account management system functions (open, close, update accounts)</b>            The TCS shall provide account management system functions and operational processes for Traffic Transactions received from the Roadside System and sent to an account for payment.</p>	X		
	<p>Note: The Proposer shall provide operations and system workflows in this Technical Response Form that describe how accounts are created, updated and maintained in the System. The Proposer shall provide in this Technical Response Form a list of all account types and their functions available in the System including but not limited to ETC Accounts, Registered Video Accounts and Unregistered Video accounts. The Proposer shall also provide in this Technical Response Form a list of configurable fields and functions that can be used by the system operator or customer in interacting with accounts. The Proposer shall describe in this Technical Response Form all operational configurable parameters and system configurable parameters that impact operations.</p> <p>Proposer Response:</p> 			
WF-004	<p><b>Customer service representative customer interactions</b>            The TCS shall provide functional customer interfaces that include updates to the account, maintenance of the account or handling of special cases such as habitual violators or other special circumstances.</p>	X		



**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

**Req ID**

Note: The Proposer shall provide in this Technical Response Form system and operations work flows that illustrate how the customer service representatives interact with the System. This includes but is not limited to account opening, updates of demographic or payment information, escalation of unresolved issues and dealing with an irate customer. The Proposer shall provide in this Technical Response Form a list of existing work flows on how case management is handled within the TCS. Case Management shall include but not be limited to how unresolved customer contacts are escalated until resolved. The Proposer shall describe in this Technical Response Form all operational configurable parameters and system configurable parameters that impact operations.

Proposer Response:

[Redacted Proposer Response]

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

Req ID		Required	Value Add
[REDACTED]	[REDACTED]		

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

Req ID		Required	Value Add
	<div style="background-color: black; width: 100%; height: 100%; min-height: 500px;"></div>		
WF-005	<p><b>Image Review</b> The TCS shall provide System functionality and operations processes to process images in Traffic Transactions and post the Transaction to the BOS prior to the issuing of Customer Statements.</p>	X	
	<p>Note: The Proposer shall provide in this Technical Response Form system and operations work flows for the review, identification and disposition of license plate numbers and state jurisdictions including establishment of thresholds for automatic OCR confidence levels, double blind reviews, presentation of the image to the reviewer, aids to complete the correct license plate and jurisdiction to the operator and any other operations quality assurance tools that can aid the operator with identifying and coding the correct image for post processing. The Proposer shall describe in this Technical Response Form all operational configurable parameters and system configurable parameters that impact operations.</p>		

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

**Req ID**

Proposer Response:

[Redacted Proposer Response]

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

**Req ID**

Req ID		Required	Value Add
			

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

Req ID		Required	Value Add
	<div style="background-color: black; width: 100%; height: 100%; min-height: 300px;"></div>		
WF-006	<p><b>Invoice generation and escalation</b>                      The TCS shall provide system functions and operations processes for Registered or Unregistered Video accounts. The TCS shall send individual Transactions on an invoice or bundle Transactions into an invoice.</p>	X	
	<p>Note: The Proposer shall provide in this Technical Response Form work flows for invoice escalation leading into the Violation processes including how invoice and Violation documents are generated, printed and mailed to customers and Violators. The Proposer shall provide with this Technical Response Form sample Customer Statements for the Project including any fees (administrative or invoice fees and Violation fines). The Proposer shall describe in this Technical Response Form all operational configurable parameters and system configurable parameters that impact operations.</p> <p>Proposer Response:</p> <div style="background-color: black; width: 100%; height: 100%; min-height: 150px;"></div>		

Work Flows (Section WF)

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

Required Value Add

Req ID

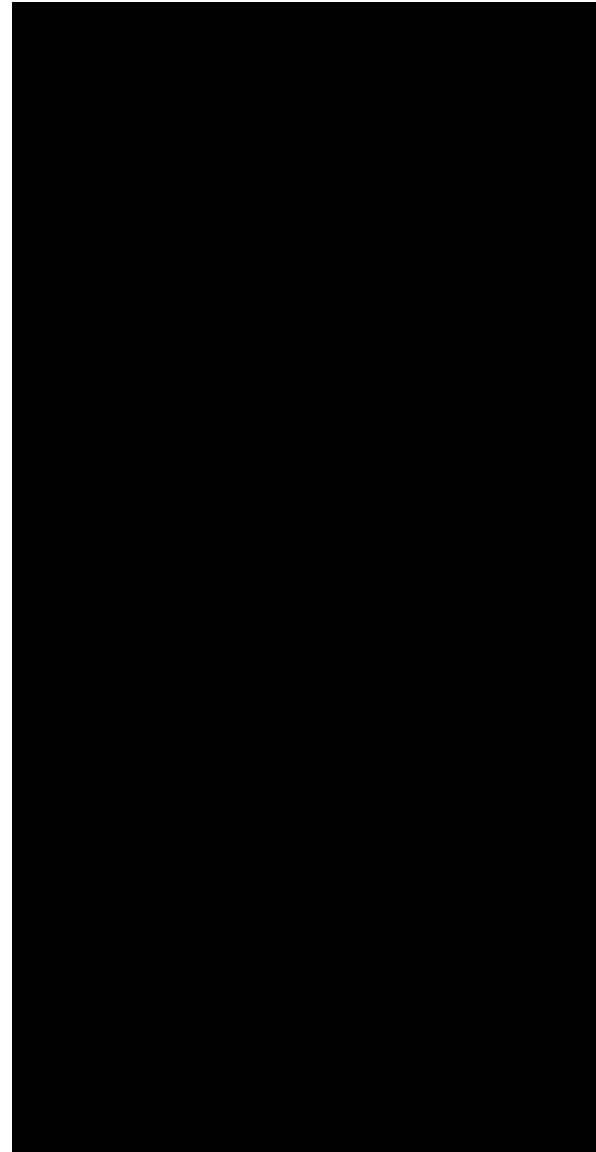


Figure 10-17 Workflow

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]





Work Flows (Section WF)		
Req ID	All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.	Required Value Add
	[Redacted]	
WF-008	<p><b>Incoming payments at the Walk-up Center – Credit, Check, Cash</b>            The TCS shall provide system functionality and operational processes to accept credit cards, checks, and cash at the Walk-up Centers.</p> <p>Note: The Proposer shall provide in this Technical Response Form work flows for other functions offered at the Walk-up Centers with the Toll System Provider's system. The Proposer shall provide in this Technical Response Form a list of typical exceptions and how the exceptions are resolved operationally or through the system. Examples of exceptions in the context of this requirement are declined credit cards, verification of the identity of the credit card (if applicable), check validation processes or other ways to verify the payment authenticity. The Proposer shall describe in this Technical Response Form all operational configurable parameters and system configurable parameters that impact operations.</p> <p>Proposer Response:</p> <p>[Redacted]</p> <ul style="list-style-type: none"> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> <li>■ [Redacted]</li> </ul> <p>[Redacted]</p>	X
WF-009	<p><b>Payment Processing (including lockbox, reversals, payment plans, refunds or mitigated deals)</b>            The TCS shall provide system functionality and operational processes to accept, process and settle lockbox payments, issue refunds, reverse Transactions and fees and perform mitigated deals for a customer on all account types.</p>	X

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

**Req ID**

Note: The Proposer shall provide in this Technical Response Form a list of existing work flows with regards to how lockbox payments are posted to the system, how the system or users of the system can issue refunds, reverse Transactions and fees and tolls on an account and how mitigated deals can be made for payment for a customer for all account types. The Proposer shall describe in this Technical Response Form all operational configurable parameters and system configurable parameters that impact operations.

Proposer Response:

[Redacted Proposer Response]

Work Flows (Section WF)			Required	Value Add
Req ID	All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.			
WF-010	<p><b>Collection agency and court interfaces</b></p> <p>The TCS shall provide system functions and operational processes for use of internal collections process or external collection agency and court processes after failure to collect funds from invoice, Violation, and collection notice process.</p>	X		
	<p>Note: The Proposer shall provide in this Technical Response Form a list of existing work flows that describe the human to system and system to system interfaces for the implementation of multiple collection agencies, and multiple court or self-imposed adjudication processes. The Proposer shall identify in this Technical Response Form the number of different collection agencies and court jurisdictions that can be interfaced with the System. The Proposer shall also describe in this Technical Response Form the nature of the interfaces with the court systems including the number of evidence package capabilities, tracking capabilities and capabilities to collect data from external systems for reporting into the TCS. The Proposer shall describe in this Technical Response Form all operational configurable parameters and system configurable parameters that impact operations.</p> <p>Proposer Response:</p> <p>[REDACTED]</p>			
WF-011	<p><b>Customer self-service payments including cash replenishments</b></p> <p>The TCS shall provide system functionality and operational processes for self-service channels such as an IVR system, Customer Website, and mobile payments or other means to provide a low cost and convenient method for receiving and processing customer payments.</p>	X		
	<p>Note: The Proposer shall provide a list of work flows for all self-service account functions on the Customer Website and IVR including but not limited to how to open an account, add funds to an account, add, update, and delete a payment method, and dispute tolls. The Proposer shall describe any other self-service functions available in the TCS. The Proposer shall also provide a list of all workflows for cash replenishments including the media used for the cash based solution (i.e. reloadable card, account number only, self-service kiosk or cashier). The Proposer shall describe in this Technical Response Form all operational configurable parameters and system configurable parameters that impact operations.</p> <p>Proposer Response:</p> <p>[REDACTED]</p>			

Work Flows (Section WF)			Required	Value Add
Req ID	All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.			
	[Redacted]			
WF-012	<p><b>Financial Reconciliation within TCS and with external accounting system</b>            The TCS shall provide system functionality and operational processes to process Financial Transactions that account for all payments made from the customer to the TCS, external agencies and/or customer interfaces (such as kiosks or retail outlet) or money received from other agencies for Project account holders.</p> <p>Note: An accounting system (e.g. general ledger) will be provided by others. The Proposer shall interface with the third-party-provided accounting system and reconcile all Financial Transactions and Traffic Transactions collected and processed by the TCS. The Proposer shall provide in this Technical Response Form workflows on how its TCS reconciles financial data with an external accounting system. The Toll System Provider shall also provide in this Technical Response Form a list of all accounting codes available and typically sent to the accounting system and shall provide the ability to track debits, credits, reversals and adjustments. The Proposer shall describe in this Technical Response Form the frequency of the data transferred to external systems and typical audit processes and frequency of the audits. The Proposer shall describe in this Technical Response Form all operational configurable parameters and System configurable parameters that impact operations.</p> <p>Proposer Response:</p> <p>[Redacted]</p>		X	
	[Redacted]			

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

**Req ID**

--	--	--	--

WF-013	<p><b>TCS incident management</b>                  The TCS shall provide System functionality and operations processes to create, manage, and dispose of incidents within the TCS (e.g. Roadside System, BOS and TOC).</p>	X	
--------	--	---	--

	<p>Note: These work flows shall address how priority levels are established in the System, how work tickets are created and how dispatchers will be notified, take action and resolve the incident. This is classically the incident management component of a Maintenance Online Management System (MOMS) and shall include the functions of the Toll Operations Center responsible for managing these incidents. The Proposer shall describe in this Technical Response Form all operational configurable parameters and system configurable parameters that impact operations.</p> <p>Proposer Response:</p> <div style="background-color: black; height: 100px; width: 100%;"></div>		
--	--	--	--

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

**Req ID**



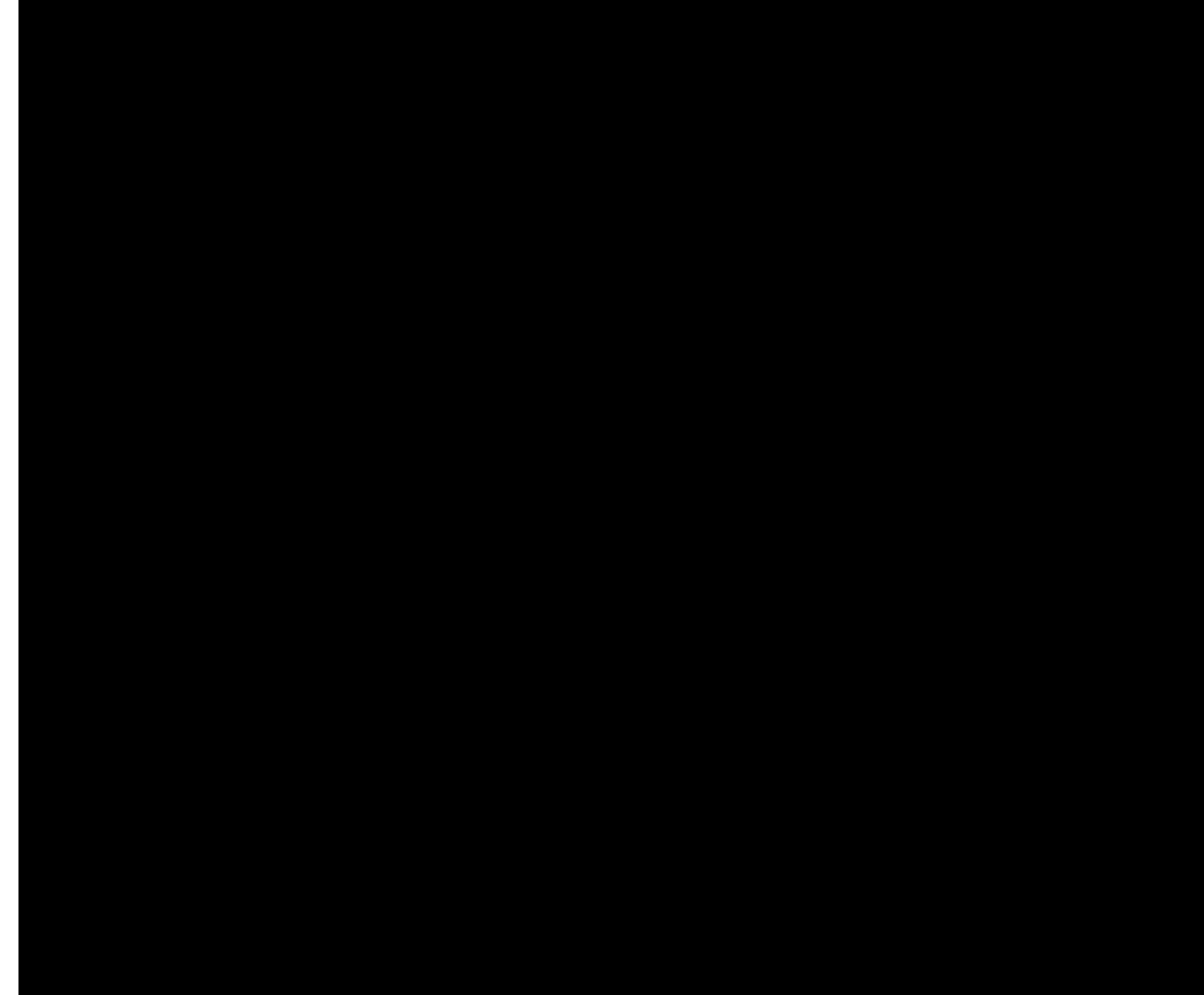
<ul style="list-style-type: none"><li>█ [Redacted]</li><li>█ [Redacted]</li><li>█ [Redacted]</li><li>█ [Redacted]</li><li>█ [Redacted]</li><li>█ [Redacted]</li></ul> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <ul style="list-style-type: none"><li>█ [Redacted]</li><li>█ [Redacted]</li><li>█ [Redacted]</li><li>█ [Redacted]</li><li>█ [Redacted]</li></ul> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p>		
--	--	--

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

**Req ID**



Work Flows (Section WF)		Required	Value Add
Req ID	All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.		
WF-014	<p><b>TCS monitoring</b> The Toll System Provider shall provide system functionality and operations processes that provide Hardware, Software and System alarm generation, priority levels assignments and final disposition.</p>	X	
	<p>Note: The Proposer shall include in this Technical Response Form a list of all alarms, whether it is Hardware, Software or System and what triggers the alarm. For example, if the alarm is triggered more than 5 times in 3 minutes, the frequency for a time period shall be provided with the alarm message description. This is typically the System monitoring component of a Maintenance Online Management System (MOMS) and shall include the functions of the Toll Operations Center responsible for managing these incidents. The Proposer shall describe in this Technical Response Form all operational configurable parameters and system configurable parameters that impact operations.</p> <p>Proposer Response:</p> <p>[Redacted]</p> <ul style="list-style-type: none"> <li>[Redacted]</li> <li>[Redacted]</li> <li>[Redacted]</li> <li>[Redacted]</li> </ul> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p> <p>[Redacted]</p>		



**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

**Req ID**

Req ID		Required	Value Add
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

Req ID		Required	Value Add
	<p>[Redacted content]</p>		



**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

**Req ID**

[Table 10-3 Sample List of Alarms Provided by the System](#)

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

Req ID		Required	Value Add
WF-015	<p><b>TCS inter-agency Transaction processing and settlement</b>                      The TCS shall provide system functionality and operations processes to interact with other agencies to process, settle and reconcile interoperable Transactions.</p> <p>Note: The Proposer shall also describe in this Technical Response Form how the TCS is able to audit all transactions processed by other agencies to be settled on home accounts and how Traffic Transactions within the System are processed for "away customers" who hold an account with another system. The Proposer shall describe in this Technical Response Form all operational configurable parameters and System configurable parameters that impact operations.</p> <p>Proposer Response:                      [Redacted]</p>	X	

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

**Req ID**

[Redacted]

[Redacted]

WF-016

**TCS configuration management**

The TCS shall provide system functionality and operations processes to provide configuration management of the Hardware and Software in the TCS.

X

Note: The Proposer shall describe in this Technical Response Form all work flows and its configuration management system to ensure that all systems provide traceability and a clear audit trail of the approved configuration for the operational system. The configuration shall include all operational parameters, system level parameters, Hardware and Software. The Proposer shall describe in this Technical Response Form how changes are made through its configuration control board and how the client (i.e. Joint Board) participates in this configuration control process. The Proposer shall also describe in this Technical Response Form workflows for patch management as well as release management for software patches. The Proposer shall describe in this Technical Response Form all operational configurable parameters and System configurable parameters that impact operations.

Proposer Response:

[Redacted]

Work Flows (Section WF)

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

Required Value Add

Req ID

[Redacted]	[Redacted]	[Redacted]	[Redacted]
	[Redacted]	[Redacted]	[Redacted]
	[Redacted]	[Redacted]	[Redacted]
	[Redacted]	[Redacted]	[Redacted]
	[Redacted]	[Redacted]	[Redacted]
	[Redacted]	[Redacted]	[Redacted]
	[Redacted]	[Redacted]	[Redacted]
	[Redacted]	[Redacted]	[Redacted]
	[Redacted]	[Redacted]	[Redacted]
	[Redacted]	[Redacted]	[Redacted]

**Work Flows (Section WF)**

All responses to items WF-001 through WF-016 shall describe both Proposer's existing work flows and required development work to meet the Technical Requirements for this Project.

**Required Value Add**

Req ID		Required	Value Add
[REDACTED]	[REDACTED]		



**Plans and Testing**

Req ID	Plans and Testing (Section TP)	Required	Value Add
TP-001	<p><b>Roadside System and Network System Plan</b>                      The Toll System Provider shall provide a Joint Board-approved Roadside System and Network System Plan including but not limited to how the System is designed, installed, configured and commissioned <b>no later than 90 days after NTP</b>. The Roadside System and Network System Plan are comprised of two components, the roadside system plan documentation and the network system plan documentation. Each component of the Roadside System and Network System Plan shall include operations and maintenance manuals, System architecture documents and diagrams, installation manuals and all external and internal Interface Control Documents. The Toll System Provider shall also provide a copy of the Software licenses and Hardware cut sheets.</p>	X	
	<p>Proposer Response:                      Kapsch fully complies with requirement TP-001 , and this compliance is described below:                      Kapsch shall develop the LSIORB Roadside System Operations Manual and the Roadside System Maintenance Manual, as well as the LSIORB Network System Plan Operations Manual and the Network System Plan Maintenance Manual and Kapsch shall incorporate all required procedures, dates, and locations for all testing required in Form K of the ITP at the dates set forth in the approved Project Schedule.                      The Kapsch Team has installed Roadside Systems and Networks similar to the one planned for the LSIORB project previously, specifically on its project for the LBJ-NTE Managers Lanes System in the greater Dallas area, and has produced detailed documentation and plans such as those required by the ITP. Kapsch will utilize this experience and its in-house subject matter experts to provide the Joint Board with the required Roadside System and Network Plans within the attached draft work schedule to meet the deadline of document approval no later than 90 days after NTP. Documentation regarding specification (cut) sheets and applicable software licenses will be provided as part of the documentation package.                      The Kapsch Team has extensive experience in successfully deploying complex Roadside and Network systems and has a foundation library of related plans and documentation. This experience and existing documentation will be valuable factors for the effective execution of the LSIORB project.</p>		
TP-002	<p><b>Back office System Plan</b>                      The Toll System Provider shall provide a Joint Board-approved Back Office System Plan, which shall include but not be limited to how the System is designed and configured, <b>no later than 90 days after NTP</b>. The Back Office System Plan shall include operations and maintenance manuals for all users of the System, System architecture documents and diagrams, installation manuals and all external and internal Interface Control Documents.</p>	X	
	<p>Proposer Response:                      Kapsch fully complies with requirement TP-002 , and this compliance is described below:                      Kapsch shall develop the LSIORB Back Office System Operations Manual and the Back Office System Maintenance Manual. Kapsch shall incorporate all required procedures, dates, and locations for all testing required in Form K of the ITP at the dates set forth in the approved Project Schedule.                      Kapsch is offering the Joint Board a proven Back Office System solution thru its team member MSB that has previously been deployed for tolling systems in Texas, Florida and California. The Kapsch Team will prepare the Back Office System Plan for the LSI ORB project based on the existing documentation for these similar systems, adding the required customization for the LSIORB project. Kapsch will supplement MSB with staff that has vast experience in working on toll systems within the E-ZPass Group to support the customizations to the BOS provided by MSB. This will ensure a seamless creation of the Back Office System Plan as well as the related manuals and Interface Control Documents. The required documents will be submitted for approval by the Joint Board no later than 90 days after NTP.</p>		
TP-003	<p><b>TOC System Plan</b>                      The Toll System Provider shall provide a Joint Board-approved TOC System Plan and documentation <b>no later than 90 days after NTP</b>. The Toll System Provider shall provide Toll Operations Center System Documentation for the monitoring of the TCS. The TOC System Plan shall include all the System monitoring plans and procedures, monitoring alarms, priorities and how issues are identified, tracked and resolved. The Toll System Provider shall provide any existing manuals for incident response externally and internally, levels of escalation for incidents and tracking methodologies for incidents and their resolution.</p>	X	
	<p>Proposer Response:                      Kapsch fully complies with requirement TP-003 , and this compliance is described below:                      Kapsch shall develop the LSIORB Toll Operations Center System Plan which shall include all of the Toll Operations Center System monitoring plans and procedures, monitoring alarms, priorities, and how issues are identified, tracked, and resolved including incident response internally and externally, levels of escalation for incidents, and tracking methodologies for incidents and their resolution. Kapsch shall incorporate all required procedures, dates, and locations for all testing required in Form K of the ITP at the dates set forth in the approved Project Schedule.</p>		

Req ID	Plans and Testing (Section TP)	Required	Value Add
	Kapsch currently provides Technical Operations Services including field- and higher level maintenance for two of the industry's highest profile projects, the LBJ and NTE Managed Lanes Systems and the Golden Gate Bridge. Kapsch has established detailed procedures and manuals for TOC operations which include the robust, field-proven Kapsch MOMS, which is also planned to be used for LSIORB. Kapsch will use these proven plans and processes as the basis to prepare a TOC System Plan specifically for the LSIORB project for the Joint Board's approval no later than 90 days after NTP.		
TP-004	<b>Roadside System and Network Installation Plan</b> The Toll System Provider shall provide a Joint Board-approved Roadside System and Network Installation Plan <b>no later than 180 days after NTP</b> . The Roadside System and Network Installation Plan shall describe the TCS installation approach, configuration parameters, schedule, methodology, proposed maintenance of traffic, and required resources (including those of the Joint Board, if applicable).	X	
	Proposer Response: Kapsch fully complies with requirement TP-004 , and this compliance is described below: Kapsch shall develop the LSIORB Roadside System and Network Installation Plan which shall include the TCS installation approach, configuration parameters, schedule, methodology, proposed maintenance of traffic, and required resources (including those of the Joint Board, if/as applicable). Kapsch shall incorporate all required procedures, dates, and locations for all testing required in Form K of the ITP at the dates set forth in the approved Project Schedule. Kapsch will prepare the Roadside System and Network installation Plan based on the approved Roadside System and Network Plan referenced in TP-001 above. As stated in the response to TP-001 most of the elements in the network and the Roadside System are already operational in other Kapsch system installations, therefore the proven, existing installation plans, configuration procedures, methodology, task durations, etc. are readily available for adaptation for LSIORB. The Kapsch Team will use this current information, the overall project schedule for LSIORB, the specifics of the Indiana and Kentucky sites, and information from meetings and discussions with the Joint Board and the Design and Build Contractor to finalize the Roadside System and Network Installation Plan. This plan will be submitted to the Joint Board for approval no later than 180 days after NTP.		
TP-005	<b>BOS Installation Plan</b> The Toll System Provider shall provide a Joint Board-approved BOS Installation Plan <b>no later than 180 days after NTP</b> . The BOS Installation Plan shall describe the installation approach, proposed installation schedule, configuration parameters schedule, methodology and required contract resources and Joint Board (if applicable) resources in the plan.	X	
	Proposer Response: Kapsch fully complies with requirement TP-005 , and this compliance is described below: Kapsch shall develop the LSIORB BOS Installation Plan which shall describe the installation approach, proposed installation schedule, configuration parameters schedule, methodology, and required resources (including those of the Joint Board, if/as applicable). Kapsch shall incorporate all required procedures, dates, and locations for all testing required in Form K of the ITP at the dates set forth in the approved Project Schedule. Similar to the Roadside System Installation Plan, the Back Office System Installation Plan will be based on proven, existing documentation regarding approach, methodology and task durations. This foundation of vetted program knowledge will be integrated with LSIORB specifics including the project schedule, the project required resources (both from the Kapsch Team and the Joint Board), and LSIORB required system modifications to provide the required plan no later than 180 days after NTP.		
TP-006	<b>TCS As-Built System Documentation</b> The Toll System Provider shall provide Joint Board-approved As-Built System Documentation for the deployed System at the Project <b>no later than 30 days after the successful completion of the System Acceptance Test</b> with any updates made since the first submission addressed in the second submission. As-Built System Documentation shall be provided in native format as well as PDF document format. The As-Built System Documentation shall include all Business Rules, Hardware cut sheets and design, Software configuration and code (where applicable) as well as installation drawings, schematics and other diagrams that describe the physical, logical, business and operational configuration of the System.	X	
	Proposer Response: Kapsch fully complies with requirement TP-006 , and this compliance is described below: The Kapsch Team's program management philosophy as well as its past project experience underscores the importance of As-Built System Documentation. Kapsch will provide an update of all TCS Documentation in an As-Built Version no later than 30 days after completion of the System Acceptance Test in native format and		

Req ID	Plans and Testing (Section TP)	Required	Value Add
	<p>PDF. The As-Built documentation will encompass the full range of required documents including Business Rules, Hardware cut sheets and design, Software configuration and code (where applicable) as well as installation drawings, schematics and other diagrams that describe the physical, logical, business and operational configuration of the System. The creation of complete As-Built documents is a standard task in Kapsch's Project Management Approach based on the PMBOK® standards.</p>		
TP-007	<p><b>Training Plan</b>  The Toll System Provider shall provide a Joint Board-approved Training Plan <b>no later than 180 days after NTP</b>. The Training Plan shall provide a list of all training courses planned to be delivered to new and existing staff on the Project. The Training Plan shall also describe training facilities, typical training equipment, proposed training for local staff, and provide course outlines for the training program. A list of all user manuals shall be described in the Training Plan as well. The Training Plan shall describe where the Joint Board staff will be trained throughout the Contract Term. The Joint Board and/or its representatives shall be invited to observe and participate in all elements of the training.</p> <p>The Training Plan shall also include a list and description of all user roles and access rights for the TCS. This list shall include all users of the TCS including Joint Board Designated Representatives.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement TP-007 , and this compliance is described below:  Kapsch will provide a complete training plan to the Joint Board no later than 180 days after NTP in line with the ITP requirements and the training approach applied by Kapsch in previous projects. The Kapsch Training Plan will apply to all areas of the systems. The training will describe both formal and informal instruction, as well as list models, guides, diagrams and component manuals as required for the LSIORB project. The plan will encompass all aspects of the training program including course outlines, modules, training for existing and new project staff, and required resources such as facilities, equipment, and documentation. The training plan will describe the training for all systems, subsystems, and equipment designed, procured, installed and integrated by Kapsch and its subcontractors. It will discuss training provided by Kapsch in both the classroom and field as appropriate for the personnel being trained and list what training will be provide computer-based as well as the manuals and other materials that Kapsch will provide to the Joint Board. Specifically for the operations team, the Kapsch Team has existing Standard Operating Procedures (SOPs) and Training Plans that will be used as a baseline for the LSIORB operations. These plans and procedures are flexible, reliable, and have proven effective in the implementation and maintenance of similar operations. In combination with applicable LSIORB business rules, BOS functionality, and LSIORB system requirements, these plans and procedures will be tailored to the operations requirements. All new operations staff will attend an initial training program to ensure mastery of all systems and program knowledge as well customer relationship skills. Training will be conducted at an appropriate level to ensure comprehension and understanding by all attendees. Additionally, before new hires are released from training, they must demonstrate mastery of all information and skills by passing a series of written and mock call assessments. If necessary, additional time will be spent with attendees to ensure their success or allow them to repeat training as necessary. Once the initial mobilization training is completed, operations training sessions will be established for all new hires and employees requiring retraining on an as needed basis. The training plan and training materials will be updated over the course of the project to reflect any changes in the systems or operations and all relevant personnel will receive the updated materials and training necessary. The Kapsch Operations and Maintenance Program Manager shall be responsible to ensure that the updates training plan and materials are distributed to all relevant team members within the TSP's and the Joint Boards organization. Kapsch shall also provide any additional training sessions that may be required after major updates.</p>		
TP-008	<p><b>TCS Project Management Plan</b>  The Toll System Provider shall submit a Joint Board-approved TCS Project Management Plan for the installation and delivery phase of the Project and update the TCS Project Management Plan for the operations and maintenance phase of the project <b>no later than 90 days after NTP</b>. The TCS Project Management Plan shall adhere to the Toll System Provider's project management methodology to deliver the Project, but shall include a roles and responsibilities matrix that clearly identifies roles and responsibilities within the Toll System Provider's organization and any interfaces to the Toll System Provider, including but not limited to the Joint Board, ETC Vendor, Developer and DBT. The TCS Project Management Plan shall also address resources, schedule, communications and delivery of the Work.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement TP-008 , and this compliance is described below:</p>		

Req ID	Plans and Testing (Section TP)	Required	Value Add
--------	--------------------------------	----------	-----------

Kapsch is one of the world’s leading toll system integrators and, as such, has well-developed expertise in managing projects of all sizes. The Kapsch Team will deliver a detailed Project Management Plan to the Joint Board no later than 90 days after NTP. Kapsch will deliver the Toll System for the LSIORB project to the Joint Board through its North American Project Management Office (PMO) and its processes and methodologies which are based on the PMBOK® guidelines from the Project Management Institute (PMI). The approach strengthens the management of both implementation and product procurement, enabling the team to achieve planned goals, reduce overall risk and ensure that the project will be delivered on time with the appropriate resource allocation. Kapsch utilizes all the lifecycle phases – Initiating, Planning, Executing, Monitoring and Controlling, and Closing as shown in the adjacent figure.

**Initiating the Project**

The goal of the initiation phase is to make sure that all project participants understand and agree on project goals, scope and management/communications processes. This promotes a smooth start to the project with all parties aligned. During the Initiating phase, the Kapsch Team aligns the project goals with the scope of work. From there, the team develops the project plan which defines the scope and objectives that must be achieved in terms of work, quality, completion date, and budget. This is essential for understanding the primary elements of the project, which results in customer satisfaction. To support this effort, Kapsch will schedule a one-day Project Kick-Off Meeting with the Joint Board team within one week after NTP to introduce team members and provide an opportunity to discuss rules of engagement/communication and commitment to project completion. As the selected ETC Vendor, Kapsch will additionally include in this meeting the points of contact currently in place between the Joint Board and Kapsch. The meeting will address at a minimum the following issues:

- Introduction of Key Staff
- Collaboration on core elements of system design
- Communications protocol between the Joint Board, the DBT, Kapsch and its subcontractors
- Project Management Plan Key Elements Review
- Subcontractor Management Plan
- High-level schedule review
- Quality Management Process
- Establish regular project meetings

Throughout the project, Kapsch will continually evaluate scope and will confirm execution is on target with the Joint Board, Kapsch subcontractors, and third-party civil contractors.

**Planning the Project**

The Planning phase involves tailoring a Project Management Plan (PMP) to guide the successful execution and management of the project schedule, budget, resources, communications, risk, procurement, and sub-contracting partners. The Kapsch project management team will prepare this plan within 90 days of NTP and submit it for the Joint Board review and approval. The documents that comprise the PMP include:

- Project Meeting and Communications Plan
- Project Implementation Schedule
- Staffing Plan
- Project Responsibility Matrix
- Program Management Plan
- Quality Assurance and Quality Control Plan

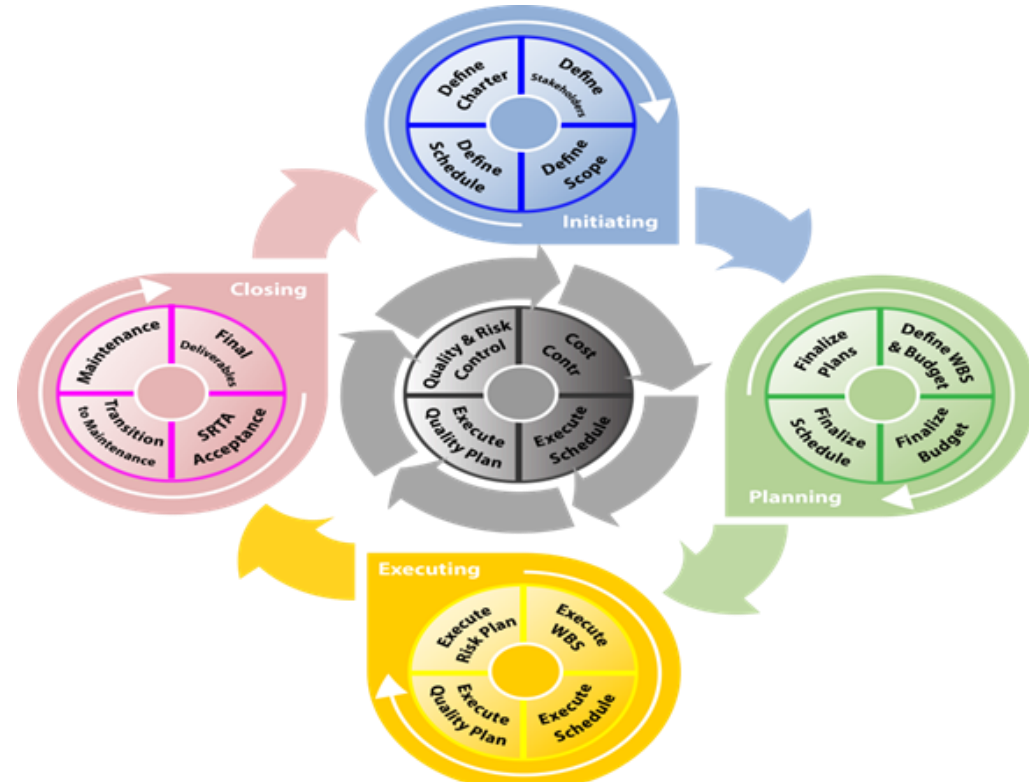


Figure 11-1 PMBOK Project Management Lifecycle

Req ID	Plans and Testing (Section TP)	Required	Value Add
	<ul style="list-style-type: none"> <li>• Interfaces with the Kapsch Team</li> </ul> <p>The approved PMP will be updated on an ongoing basis to reflect any changes that occur over the course of the management.</p> <p><b>Executing the Project</b></p> <p>The Executing phase involves the actual implementation and management of the project. At this point, Team Kapsch begins developing and delivering work product to the Joint Board based on the scope of work in the RFP using the methods and processes laid out in the Project Management Documentation. Additionally, Team Kapsch implements several processes and plans to support meeting the required deliverables, this includes:</p> <ul style="list-style-type: none"> <li>• Meeting and Communications Management</li> <li>• Resource Management</li> <li>• Cost Management</li> <li>• Quality Management</li> <li>• Change Management</li> <li>• Risk Management</li> <li>• Issue Management</li> <li>• Procurement Management</li> <li>• Testing Management</li> <li>• Acceptance Management</li> <li>• Interface Control Documents</li> <li>• Updated Maintenance Plan</li> <li>• Comprehensive data Archive &amp; Backup Plan</li> <li>• Software Design Description</li> </ul> <p><b>Monitoring and Controlling the Project</b></p> <p>The Monitoring and Controlling phase monitors the project work, manages change control, continually verifies scope; and monitors risk, cost, and issues. Unlike the iterative phases of the project lifecycle, monitoring and controlling truly starts from the beginning and becomes more critical as the Kapsch Team transitions to the executing phase of the project lifecycle and eventually the Closing phase.</p> <p><b>Closing the Project</b></p> <p>The final phase is the Closing phase of the project lifecycle, it involves the final deliveries such as As-Built Documentation, Joint Board acceptance of the project elements (and eventually all deliverables), and system maintenance. The Kapsch Team performs the following activities to ensure the Joint Board realizes all the project and system objectives required:</p> <ul style="list-style-type: none"> <li>• Complete and deliver all as-built documentations per the requirements of the Scope or Work</li> <li>• Analyze project completion criteria</li> <li>• Identify outstanding issues</li> <li>• Deliver transition plan to seamlessly transition operations to the Joint Board</li> <li>• Deliver a final project report detailing the closure of all activities</li> <li>• Continue providing maintenance</li> </ul> <p>The Kapsch Team's management approach, which is based on PMI standards, provides assurance to the Joint Board of a well-managed, transparent project execution.</p>		
TP-009	<p><b>Safety Plan</b></p> <p>The Toll System Provider and each Major Subcontractor shall submit a Joint Board-approved Safety Plan <b>no later than 90 days after NTP</b>. The Safety Plan shall address how the Toll System Provider shall conduct its work using safe methods. The Safety Plan shall also describe how safety is communicated with its employees, how safety audits are completed and any other information necessary to perform Work on the Project.</p>	X	
	<p><b>Proposer Response:</b></p> <p>Kapsch fully complies with requirement TP-009 , and this compliance is described below:</p>		

Req ID	Plans and Testing (Section TP)	Required	Value Add
	<p>It is the policy of Kapsch, to provide a safe and healthy work environment for all employees, to plan and conduct all operations with a maximum emphasis on safety and to abide by all safety regulations applicable to the project. Kapsch has established a zero tolerance policy for all projects with regards to safety. The safety and health of our employees receives first consideration throughout all phases of the work. All employees and subcontractors must be completely aware of the responsibility they accept to prevent health impairment due to occupational exposure and to create an accident-free work environment. In order to accomplish this Kapsch, through its employees, agents, vendors, subcontractors, and consultants will adhere to the policies and procedures outlined in the Safety Plan provided by Kapsch to the Joint Board. Kapsch will base the Safety Plan for the LSIORB project on its standard Safety Procedures that are used in all Kapsch Field System Projects across the United States and are based on OSHA standards. Furthermore, should a subcontractor, vendor, consultant, the Joint Board, or other integration partner have more stringent safety policies and procedures than are outlined in this document, then the more stringent and comprehensive document will be followed. The Kapsch Safety Plan will be delivered in line with the project schedule for Joint Board Approval no later than 90 days after NTP.</p>		
TP-010	<p><b>System Configuration and Management Plan</b>  The Toll System Provider shall provide a Joint Board-approved System Configuration and Management Plan <b>no later than 90 days after NTP</b>. The System Configuration and Management Plan shall describe how Hardware, Software and system configuration settings will be managed from Tolling Readiness through the Operations and Maintenance Term. The System Configuration and Management Plan shall describe how any change is identified, documented, controlled and verified during the Installation Work and the Operations and Maintenance Term. Any change proposed by TSP shall be submitted to the Joint Board for review and approval pursuant to the Approval Process.</p>		
	<p>Proposer Response:  Kapsch fully complies with requirement TP-010 , and this compliance is described below:  The System Configuration and Management Plan is one of the first design documents that Kapsch will prepare for the Joint Board's review and approval no later than 90 days after NTP. The plan will be based on the Kapsch Team's knowledge and expertise gained from system implementations similar to the LSIORB project and will detail the strategies and methodologies for managing hardware, software and overall system configurations throughout the term of the project.  Among other topics, the Kapsch Team's System Configuration and Management Plan will include:</p> <ul style="list-style-type: none"> <li>• management methods for system review</li> <li>• release management of documents</li> <li>• configuration of systems</li> </ul> <p>Specific procedures and tools will be discussed including tools to support management functions such as Windows 2013 Server with Directory Structure, eMatrix Document Management System, Navision; MS SourceSafe, Clear Case, Clear Quest, SharePoint, and Mantis.</p>		
TP-011	<p><b>Maintenance and Support Plan</b>  The Toll System Provider shall provide a Joint Board-approved Maintenance and Support Plan <b>no later than 180 days after NTP</b>. The Maintenance and Support Plan shall describe how the Toll System Provider shall conduct preventative and corrective maintenance and support activities for the Roadside System and the BOS. The Maintenance and Support Plan shall describe preventative maintenance, corrective maintenance, Spare Parts and inventory management procedures and how Operations and Maintenance Work is managed for the System. While one plan is required, the Toll System Provider may submit a separate MSP for each functional area, for example there may be a Roadside System MSP and a BOS MSP as two separate plans. However, if more than one MSP is submitted, the MSPs shall demonstrate end to end coverage of the System. If the Toll System Provider has predictive maintenance activities this should also be described in the MSP, and the MSP shall address how the Toll System Provider shall meet all Performance Requirements, priority response and repair times for each item. The Toll System Provider shall include an organization chart and notifications for incidents as well a description of how MOMS is used to track incidents through resolution.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement TP-011 , and this compliance is described below:  Among its other systems and operations projects, Kapsch is currently providing Maintenance and Support for two prominent US toll projects – the LBJ Express managed lanes project in the greater Dallas area and the Golden Gate Bridge in San Francisco. The Kapsch Team's maintenance and support approach and methodology have been field-proven in these and other Kapsch projects worldwide and will provide the basis for the Maintenance and Support Plan tailored for the LSIORB project. Kapsch will provide a Maintenance and Support Plan to the Joint Board for approval no later than 180 days after NTP. The maintenance plan will be made up by one overall Master Maintenance Plan establishing the different levels of maintenance as well as the Maintenance Organizational Chart, resource</p>		

Req ID	Plans and Testing (Section TP)	Required	Value Add
	<p>planning and key procedures for system-wide maintenance, including the key role of the robust Kapsch MOMS. Key areas covered in the Master Maintenance Plan include at a minimum:</p> <ul style="list-style-type: none"> <li>• Procedures for Planned and Preventative Maintenance (Demarcation, Coordination, Scheduling, Reporting)</li> <li>• Procedures for Emergency Maintenance (Demarcation, Coordination, Reporting)</li> <li>• Establishment of Corrective Maintenance Levels 1-4</li> <li>• Hardware Maintenance: <ul style="list-style-type: none"> <li>• Preventative Maintenance: MTBF Tables</li> <li>• Corrective Hardware Maintenance Procedures</li> <li>• Third Party Maintenance Support (SLAs)</li> <li>• Spare Parts and Inventory Control</li> </ul> </li> <li>• Software Maintenance: <ul style="list-style-type: none"> <li>• Patch / Update Process - Release and roll-out management</li> <li>• Software Inventory</li> <li>• Other Changes</li> </ul> </li> <li>• MOMS <ul style="list-style-type: none"> <li>• MOMS Architecture Overview</li> <li>• Event Handling</li> <li>• Alarms</li> <li>• Work Orders</li> <li>• Real Time Monitors</li> <li>• Reliability and Availability</li> <li>• User Interaction and Workflows</li> </ul> </li> <li>• Facilities and Workshops</li> <li>• Staffing Levels <ul style="list-style-type: none"> <li>• Maintenance Organization Chart</li> <li>• Definition of Maintenance Roles and Responsibilities</li> <li>• Role profiles and required qualifications</li> <li>• Recruitment plan for qualified staff</li> </ul> </li> <li>• Security Policies</li> <li>• Safety Policies</li> <li>• Maintenance Tools</li> <li>• Maintenance Vehicles</li> <li>• Maintenance Training</li> <li>• - Records and Reports <ul style="list-style-type: none"> <li>• Daily Status Reports</li> <li>• Regular Reports (Weekly, Monthly, Quarterly, Annually)</li> </ul> </li> <li>• Disaster Recovery</li> <li>• End of Maintenance Transition Plan</li> </ul> <p>Kapsch's approach to maintenance follows the principle to assign a dedicated Manager for the Operations and Maintenance for each project as well as an efficient maintenance team who are fully dedicated to the specific project. In addition, this core local team is supported by the Kapsch Groups Technical Operation Center</p>		

Req ID	Plans and Testing (Section TP)	Required	Value Add
	<p>Team and a group of Subject Matter Experts who are consulted as needed. This approach enables Kapsch to dedicate a team with in-depth knowledge of each individual system to the project while also keeping the overall maintenance cost low through sharing internal resources across projects. It has also shown as most efficient to fill roles in the Maintenance Organization of a project with team members who were involved in the implementation of the system from the beginning and are aware of risks, issues and opportunities from day one after go-live.</p> <p>To ensure this proven process for LSIORB, Kapsch has established a dedicated Project Manager Role during the system Implementation that will focus on the Back Office System and who will transition into the role of Operations and Maintenance Program Manager throughout the delivery of the overall system. This role will be filled by Sara Wheeler, who has vast experience in both the implementation and operation of Roadside and Back Office Systems in the United States.</p> <p>In addition to this Master Maintenance Plan, Kapsch will also provide Maintenance Manuals individually to all major subsystem on the Roadside and in the Back Office System showing the detail of each subsystem for different user groups.</p> <p>In summary, Kapsch shall assign a dedicated Operations and Maintenance Manager for LSIORB, as well as an efficient maintenance team who are fully dedicated to LSIORB. This core and local team shall be supported by and interactive with the Toll System Provider Technical Operations Center team and a group of Subject Matter Experts (SMEs) shall be available and consulted if/as needed.</p> <p>Kapsch shall provide a dedicated Project Manager during the System implementation who will focus on the Back Office System and who will transition into the role of Operations and Maintenance Program Manager throughout the delivery of the overall LSIORB system.</p> <p>In addition to the approved Maintenance and Support Plan, Kapsch shall also provide Maintenance Manuals for all major subsystems on the Roadside and in the Back Office System detailing each subsystem for different user groups.</p>		
TP-012	<p><b>Transition Plan</b>  The Toll System Provider shall provide a Joint Board approved Transition Plan <b>no later than 180 days after NTP</b>. The Transition Plan shall describe how the System will be transitioned from test environments to production using the testing approach described in the Technical Requirements. Further the Transition Plan shall include all resources, scheduling and detailed step by step transition procedures for the overall System transition from test environments to production.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement TP-012 , and this compliance is described below:</p> <p>Transitioning from a development system to live operations is a critical milestone in any project and one that the Kapsch Team has implemented seamless for its previous projects. Kapsch will provide the Joint Board with a detailed Transition Plan describing the implementation of the full system from the testing environments to the live production system. The TSP will maintain the testing environment for the Joint Board after the transition through acceptance for the investigation of any potential issues. All transition tasks will be captures in the detailed Work Schedule for the project. In addition Kapsch will provide a break-out schedule dedicated specifically to the required transition activities including all resources, scheduling, and step-by-step transition procedures. The Transition Plan will provide the Joint Board full visibility into the specifics of how this critical milestone will be managed.</p> <p>In summary, Kapsch shall provide the Joint Board with a detailed Transition Plan describing the implementation of the full system from the testing environments to the live production system. Kapsch shall maintain the testing environments for the Joint Board after the transition for the investigation of any potential issues. Kapsch shall capture all transition tasks in the detailed Project Schedule. Kapsch shall provide a break-out schedule dedicated specifically to the required transition activities including all resources, scheduling, and step-by-step transition procedures giving full visibility into management of the transition.</p>		
TP-013	<p><b>Third Party Manuals and Documentation</b>  The Toll System Provider shall provide and maintain standard, commercially available, updated documentation for third-party provided Hardware, Software, and services. This set of manuals shall be maintained on a Toll System Provider provided shared collaboration site (e.g. SharePoint, eRoom) and be available to the Joint Board <b>no later 180 days of NTP to review and download</b>. The Toll System Provider shall update these documents as required no less frequently than every 180 calendar days.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement TP-011 , and this compliance is described below:  As described in the response to requirement TP-011, Kapsch will include a Third Party Support Plan in the Master Maintenance Plan. In addition Kapsch will also store a detailed BOM of all deployed Hardware and Software with serial numbers, version numbers, and other relevant information together with all related product sheets and manuals. This log will be divided by Hardware and Software delivered by Kapsch and a separate Third-Party Manuals and Documentation. Each will be</p>		



Req ID	Plans and Testing (Section TP)	Required	Value Add
	stored in a dedicated Directory on the Project SharePoint that will be maintained by the Project Manager. The Project Manager is responsible for updating this directory at a minimum every 180 days. The final update will be traceable through the document revision logs in SharePoint which will be made available to the Joint Board as requested.		
TP-014	<p><b>End of Contract Transition Plan</b>  The Toll System Provider shall provide a Joint Board approved End of Contract Transition Plan <b>at the completion of the System Acceptance Test</b>. This End of Contract Transition Plan shall address how the Toll System Provider will efficiently and seamlessly transition, without any disruption to users or the Joint Board, the operation and maintenance of all aspects of the System to another toll system provider or providers. The End of Contract Transition Plan is subject to Joint Board review and approval and shall be updated no less frequently than annually after approval. All updates are also subject to Joint Board review and approval. The End of Contract Transition Plan shall address the items described in Section 4.13 of the Agreement, and if the BOS and CSC services are provided at a commingled facility the End of Contract Transition Plan shall take into account special considerations related to the commingled facility.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement TP-014 , and this compliance is described below:  One of the Kapsch Team's primary goals for its projects is to provide a seamless transition for its customers at the end of a project. To support this goal, and in compliance with TP-014, Kapsch will provide an initial End of Contract Transition Plan to the Joint Board within the Master Maintenance Plan described under the response to requirement TP-011. After review and approval of the Master Maintenance Plan Kapsch will provide a separate End of Contract Transition Plan covering at a minimum the requirements described in Section 4.13 of the Agreement and include following items:</p> <ul style="list-style-type: none"> <li>• Provide status of open punch list items (if any)</li> <li>• Provide a check list for a complete project walk-through with the Joint Board for a full system inspection, including all field and back office equipment hardware and software</li> <li>• Provide a mapping between business rules and associated configuration parameters</li> <li>• Deliver all maintenance records and manuals</li> <li>• Provide all required spare parts to the Joint Board</li> <li>• Provide a complete record of all spare parts delivered to the Joint Board</li> <li>• Provide all deliverable maintenance tools required for the entire system</li> <li>• Provide all password lists to the Joint Board</li> <li>• Complete any final training for the Joint Board and the new system provider(s) as required.</li> <li>• Update and deliver As-Built manuals and drawings and system manuals</li> <li>• Coordinate the transfer of assets (transponders, customer materials, etc.) from the CSC to the new providers.</li> </ul> <p>The Transition Plan will be updated throughout the project, not less than annually, to reflect any changes in the project.</p>		
TP-015	<p><b>Business Rules and Operational Requirements (BROR)</b>  The Toll System Provider shall provide an initial BROR for the Project <b>no later than 90 days after NTP</b>. Once approved by the Joint Board, the Business Rules and Operational Requirements shall be attached to the Technical Requirements. The Business Rules and Operational Requirements <b>shall be updated 180 days prior to the Tolling Readiness Date and again 90 days after the System Acceptance Test is successfully completed</b>. The Business Rules and Operational Requirements shall be submitted to the Joint Board each time for review and approval. The Business Rules and Operational Requirements shall describe all Business Rules for the Operations and Maintenance Work for all components of the System, including any external systems used to operate and maintain the System.</p>	X	
	<p>Note: The Joint Board will make itself available to discuss the Business Rules with the TSP during the Business Rule development period.</p> <p>Proposer Response:  Kapsch fully complies with requirement TP-015 , and this compliance is described below:  The Business Rules and Operational Requirements are the core of the customization effort for the Toll System provided by the Kapsch Team to the Joint Board.  <b>Kapsch shall provide an initial draft of the business rules document to the Joint Board at NTP.</b> In order to ensure successful completion of the BROR,</p>		

Req ID	Plans and Testing (Section TP)	Required	Value Add
	<p>Kapsch will hold two one-day workshops with the Joint Board reviewing its initial and revised proposal for Business Rules and Operational Requirements prior to the initial submission of the BROR document (timing shown in the Draft Work Schedule attached to Kapsch's Proposal).</p> <p>During testing and implementation Kapsch will constantly review the BROR and make updates when necessary. Any significant updated to the BROR will be discussed with the Joint Board immediately in one of the regular Meetings between the TSP and the Joint Board. The revised BROR submitted by Kapsch 180 before Tolling Readiness will not be modified anymore unless Kapsch is specifically directed by the Joint Board to do so. The Kapsch operations team will update the Business Rules document over the course of the contract as required to reflect changes in business rules and standard operating procedures. All changes will be submitted to the Joint Board during the regular meetings between the Kapsch Team and the Joint Board.</p>		
TP-016	<p><b>Monthly Project Management Report and Meeting</b></p> <p>Every month of the Contract Term, the Toll System Provider shall deliver a Monthly Project Management Report that describes the current status of the Project, current or new risks on the Project, a summary of work completed in the last 30 days and expected work to be completed in the next 30 days. The form of the Monthly Project Management Report shall be subject to the review and approval of the Joint Board. The Monthly Project Management Report shall also include an updated resource loaded GANTT schedule delivered in MS project and delivered in PDF. The Project schedule shall reflect current staff and progress measured against the baseline schedule. The Monthly Project Management Report shall highlight the Critical Path and near Critical Path items on the Project and the Toll System Provider's current plan to ensure no delays are incurred during the delivery. If the Toll System Provider is behind schedule or also upon the request of the Joint Board, the Toll System Provider shall provide a written corrective action plan that describes how and when the Toll System Provider will recover to meet the baseline approved Project schedule. Toll System Provider shall continuously monitor its compliance with this requirement commencing with Pre-Toll Operations, and report its compliance or noncompliance with this requirement each month in this Monthly Operations and Maintenance Report. <b>The Monthly Project Management Report and an updated Project Schedule shall be delivered at least 3 business days before the Project management review meeting with the Joint Board.</b> The Toll System Provider Project Manager - Installation shall attend this meeting in person.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TP-016 , and this compliance is described below:</p> <p>Clear and regular communication with its customers and associated stakeholders is an essential keystone in the Kapsch Team's project management approach and, in conjunction with the Monthly Project Management Review meeting, the monthly Project Management Report is an important element of this communication. This type of communication helps assure that stakeholders are informed of the project's status and are aligned with near-term goals and responsibilities. Appropriate Kapsch Team personnel, in particular the TSP Project Manager for Installation will attend the Monthly Project Management Review meetings in order to discuss the report and address any questions that might arise.</p> <p>Kapsch will supply a monthly Project Management Report to the Joint Board. The monthly report will at a minimum contain:</p> <ul style="list-style-type: none"> <li>• Summary of all work completed</li> <li>• Progress towards completion of upcoming project milestones</li> <li>• Work plan for the next 30 days</li> <li>• Updated resource loaded GANTT chart schedule (MS Project and PDF) showing project progress against baseline schedule and critical path</li> <li>• Schedule risk mitigation (if applicable)</li> <li>• Other potential project risks and opportunities</li> <li>• Operations and Maintenance related topics</li> </ul> <p>The Report will be provided to the Joint Board no later than three business days prior to the Monthly Project Management Review.</p> <p>Kapsch shall support the Monthly Project Management Review either at the Kapsch Offices or at a location selected by the Joint Board. Kapsch shall prepare and distribute an agenda for the Review Meeting together with the Monthly Report for the Joint Board's review and approval. The meeting will be attended at a minimum by the Kapsch/LSIORB Senior Project Manager, the Roadside Implementation Project Manager, and the BOS Project Manager / Operations and Maintenance Program Manager. If/as required per the meeting agenda or if/as requested by the Joint Board, Kapsch will add additional team members to the meeting.</p> <p>In addition Kapsch shall conduct and support a series of regular project meetings that will be detailed in the Project Management Plan to ensure close alignment between the Kapsch Team, the Joint Board, and the Design Build Contractor, and the Developer.</p> <p>Due to the dynamic nature of an implementation project as complex as the LSIORB project, Kapsch shall establish a permanent Project Office in Louisville,</p>		

Req ID	Plans and Testing (Section TP)	Required	Value Add
	Kentucky and shall support ad-hoc meetings if/as requested by the Joint Board.		
TP-017	<p><b>Quality Management Plan (QMP)</b>  The Toll System Provider shall provide a Joint Board approved Quality Management Plan <b>no later than 90 days after NTP</b>. The QMP shall be subject to the review and approval of the Joint Board and shall describe how the Toll System Provider manages the quality assurance and quality controls throughout the Contract Term. The QMP shall address verification and validation of changes including coordination with the change management plan, supply chain management including how all Suppliers and subcontractors are addressed in the delivery, operations and management of the TCS. The QMP shall address handling of materials, control of records on the Project, and how the Toll System Provider shall conduct audits to ensure the efficient and complete performance of the Work and other obligations of the TSP under the Contract.</p> <p>The Toll System Provider shall develop and maintain a quality assurance and quality control program to ensure compliance to all requirements and obligations in the Contract. The Toll System Provider QMP shall establish key performance measures, regular audits and reporting to ensure requirements compliance is repeatable and the customer experience is consistent and revenue collection is at the highest efficiencies possible. The quality assurance program shall be documented in the Quality Management Plan during delivery and shall be addressed in a quality assurance section to be included in the Monthly Project Management Report provided to the Joint Board.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TP-017 , and this compliance is described below:  Kapsch and its team members are committed to providing the Joint Board with products and services that fully satisfy system requirements and comply with Kapsch contractual obligations. Kapsch employees are responsible for ensuring that the work performed and the products delivered by them and their subcontractors conform to system requirements and the applicable quality standards established by the company's Quality Assurance Policies. These policies are summarized in Kapsch's Quality Management System (QMS) that will be the basis for the Quality Management Plan that Kapsch will submit to the Joint Board for Review and approval no later than 90 days after NTP.  Kapsch's Quality Management function assures work product quality by ensuring work process quality. The Quality Assurance function inspects and/or tests work product samples, independently verifies product quality, monitors quality control activities, and examines quality records to assess the effectiveness of quality control processes. The principal methods used by Quality Assurance in carrying out its mission include the following:</p> <ul style="list-style-type: none"> <li>• Quality System Training</li> <li>• Quality Reviews</li> <li>• Audits</li> <li>• Quality System Non-Conformance Reporting and Tracking</li> <li>• Management Quality System Reviews</li> </ul> <p>Quality Assurance is focused on detecting weaknesses in performance and/or deficient practices and procedures that cause quality defects and non-conformances, determining root causes and corrective actions, and tracking corrective actions to completion. The Kapsch methodology throughout the delivery of the LSIORB project will follow the strict guidelines of the ISO 9001:2008 standards assuring the Joint Board of internationally recognized quality standards.  The Quality System is integral to Kapsch's operations, and involves personnel engaged in all aspects and phases of work performance. It is based on the principle that each individual employee, supplier or subcontractor is responsible and accountable for the quality of their own work. The Quality Management Plan facilitates this principle through training, policies, standards, organization, supervised practices and procedures, and supporting systems and tools. These have been developed to establish quality awareness and responsibility, promote best practices, verify quality and ensure the effectiveness of the Quality Management Plan.  The Roadside and Back Office Systems required to fulfill Kapsch's scope in the LSIORB Project is a joint endeavor that encompasses the technical expertise of various subcontractors, vendors, technical experts, and suppliers. While each team member involved in providing the solution will undoubtedly be focused on ensuring that their contribution to the overall system exceeds the quality standard outlined in the contract documents, Kapsch will provide additional quality assurance oversight for the entire system.  As the Toll System Provider, Kapsch views the contributions of all its external and internal team members, along with the subsystems that each team member will provide for the LSIORB Project as one integrated system.  The Kapsch Quality Management Plan is designed to ensure work product quality through effective control of the processes used to perform and manage work.</p>		

Req ID	Plans and Testing (Section TP)	Required	Value Add
	<p>These include the following key process areas:</p> <ul style="list-style-type: none"> <li>• Project Planning</li> <li>• Requirements Management</li> <li>• Configuration Management</li> <li>• Design and System Development</li> <li>• Document Management</li> <li>• Software Development</li> <li>• Supplier and Subcontractor Management</li> <li>• Production</li> <li>• System Integration and Testing</li> <li>• Construction Management</li> <li>• Field Installation, Test and Startup</li> <li>• Warranty, Service and Technical Support</li> <li>• The general methods used by Kapsch to control quality include the following:</li> <li>• Requirements tracking</li> <li>• Configuration tracking and change control</li> <li>• Defect logging and corrective action tracking</li> <li>• Document quality review and supervisory approval</li> <li>• Client review, comment, approval and acceptance</li> <li>• Material, equipment and production work product inspection</li> <li>• Unit/component, subsystem and integrated testing</li> <li>• Construction materials and work product inspection</li> </ul> <p>The objective of these methods is to verify work product quality at defined hold points in the work flow. Hold points are established where responsibility for performing work is handed off from one function to another. For instance, panel shop drawings are not issued for panel production until they have been checked and approved internally and usually also by the Joint Board's design authority.</p>		
TP-018	<p><b>Configuration and Change Management Plan</b></p> <p>The Toll System Provider shall provide a Joint Board approved Configuration and Change Management plan <b>no later than 90 days after NTP</b>. The Configuration and Change Management Plan shall describe how the Toll System Provider identifies and manages change including the identification of a change control board to be used during the installation and configuration of the System as well as during operations. The Configuration and Change Management Plan will outline the process in which changes are identified, escalated and brought to the owner, process to notify the Joint Board of changes, and final resolution and tracking of changes throughout the TCS Operations and Maintenance Term.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TP-018 , and this compliance is described below:</p> <p>The application of an effective and proven change management process is key to the successful delivery of a project the size and complexity of the LSIORB project in order to manage major issues in managing the design, cost, scope and schedule of the project. Kapsch has applied the processes and policies in this section in multiple projects in the United States and around the world with great success.</p> <p>The Kapsch Project Management Office follows clearly defined processes that are laid out in the company's change management policy, which ensures that the Quality Management approval process is followed for all hardware and software changes. Change order process procedures are implemented upon notification to the Project Manager of a needed or requested change to each deployed system's hardware or software. A process flow diagram of the change order procedures is provided below. The process shown below would commonly be triggered by a change request issued by the Joint Board:</p>		

Req ID	Plans and Testing (Section TP)	Required	Value Add
--------	--------------------------------	----------	-----------

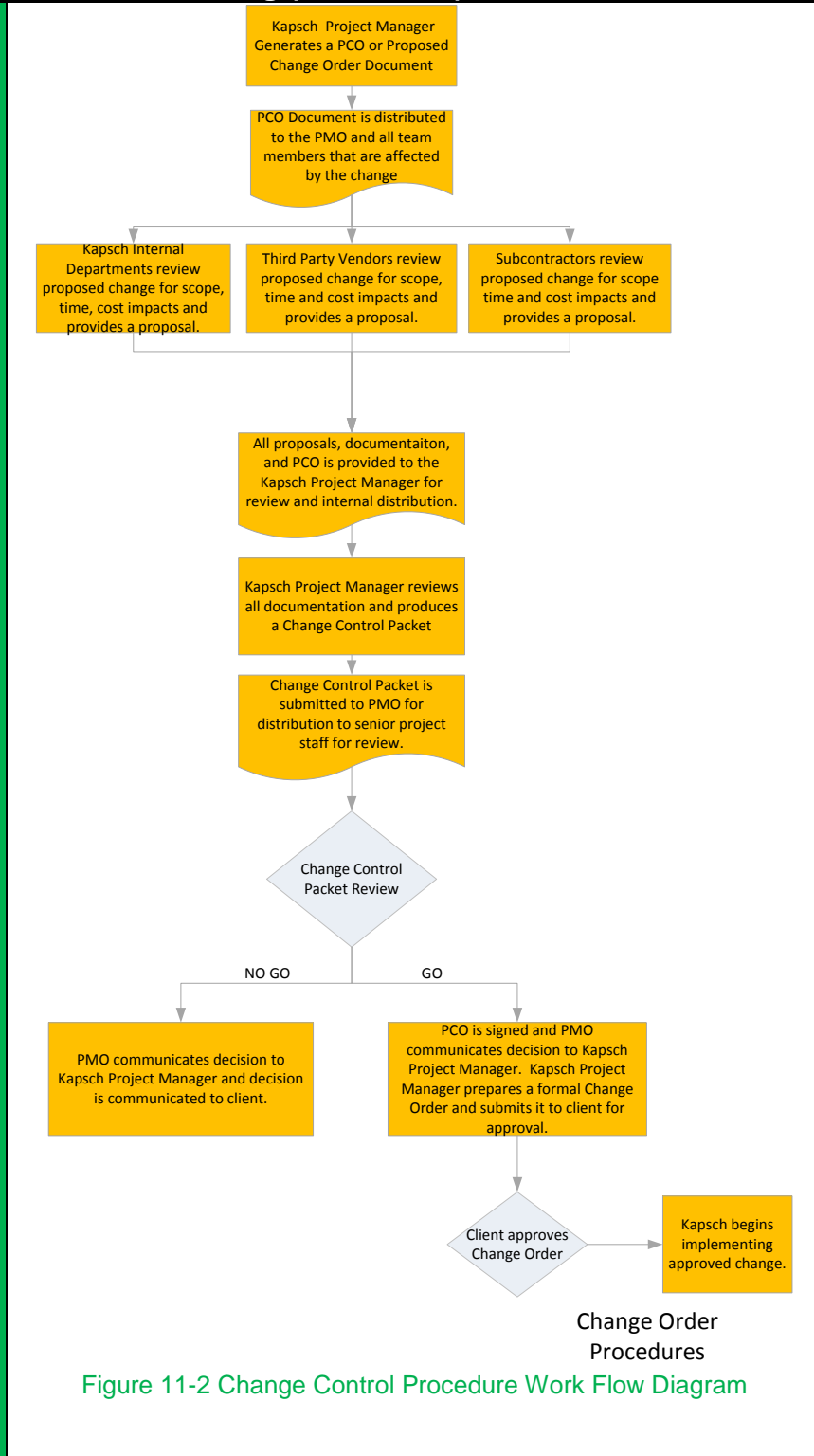


Figure 11-2 Change Control Procedure Work Flow Diagram

The Kapsch Project Management Office uses the Oracle Contract Manager Tool to log and track all Project Change Orders throughout the entire process listed above.

**Changes to Documentation**  
Once a change order is approved by the customer, the Kapsch team updates all required documentation through the document control process following the outlined project specific rules and procedures for each individual project. Changes are logged in the document change log and a new version of the document is created in accordance to the defined document submission and review process.

**Changes during Design Phase**  
Agreed changes to the system during the design will be handled through the requirements management process which will be defined in a system requirements document and logged as a change in the DOORS tool that is used by Kapsch for requirements tracking.

**Changes During Maintenance**  
Kapsch uses its own Maintenance Online Management System (MOMS) to register all reported maintenance actions and activities, including software defects/faults, enhancement requests and change requests. All recorded issues are considered change requests for the purpose of change control. Alteration or cancellation of tickets requires a change issue be entered before code changes and document changes can be checked into the code/document repository. This provides a means to enforce, monitor and record the change approval and development status throughout the project lifecycle.

Kapsch will deliver a detailed Change Management Plan to the Joint Board based in these principles for Review and Approval no later than 90 days after NTP.



TP-019	Master Testing and Commissioning Plan	X	
--------	---------------------------------------	---	--

Req ID	Plans and Testing (Section TP)	Required	Value Add																												
	<p>The Toll System Provider shall provide a Joint Board-approved Master Testing and Commissioning Plan (MTCP) <b>no later than 90 after NTP</b>. The MTCP shall include a list of all of the testing including a description of each test, a sample and representative completed test procedure for the Project, roles and responsibilities for each test phase, the entry and exit criteria for each test including test environment for each test, a requirements traceability matrix used to verify the requirements and failure reporting, tracking and analysis. The MTCP shall be developed to satisfy the testing requirements as outlined below in Technical Requirements TP-020 thru TP-025 outlined below.</p>																														
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TP-019 , and this compliance is described below:  A Master Testing and Commissioning Plan is essential to the successful deployment of the LSIORB project. This plan clearly defines the functions and success criteria that the system must complete in order to begin revenue collection. In addition, it provides the structure for the effective commissioning of the system and aligns all stakeholders to important milestones in the project lifecycle.  The Kapsch Team’s MTCP will lay out in detail the overall testing methodology and approach utilized by Kapsch for the LSIORB project and describe all tools, facilities and testing environments on a high level. It will also clearly define the content of testing documentation for each test required by the Joint Board including a specific test plan, test cases and scenarios, test entry and exit criteria, approval and sign-off procedures, test report format and content and a detailed test schedule.  In addition the MTCP will contain an overview over all test locations utilized by Kapsch for the LSIORB project as well as the complete Requirements Traceability Matrix linking each technical requirement to a specific test during the project. This traceability matrix will be updated with each individual test plan to specify the test cases in which each requirement is covered. Each test case itself notes the requirement(s) it is supposed to verify. A sample Test Case from the LBJ-NTE Managed Lanes System Project is shown to right in Figure 11-3.  The MTCP will also describe in detail the roles and responsibilities for each test required during the LSIORB Project. Kapsch will nominate a dedicated test manager who will report directly to the Project Management Team and have overall responsibility over all test planning, documentation and execution.</p> <div> <p><b>Kapsch TrafficCom</b>   <b>kapsch</b> &gt;&gt;&gt;</p> <p>LBJ-NTE Factory Acceptance Test Execution Description</p> <p><b>6. FAT RESULTS &amp; ANALYSIS</b></p> <p><b>6.1 Core Scenario Testing</b></p> <p>The Core Scenario testing consisted of the scheduled runs from TCS-FAT-100 through TCS-FAT-166. These encompassed a variety of lighting, vehicle, and vehicle patterns. There were a total of 1172 vehicle passages, there were issues seen on 15 of the vehicle passages.</p> <p>The results have been analyzed for the following:</p> <ul style="list-style-type: none"> <li>• Vehicle Detection</li> <li>• Vehicle Classification (limited)</li> <li>• Transponder Reading</li> <li>• Transponder correlation</li> <li>• Image capture (front, rear, both)</li> </ul> <p>There were a moderate number of issues encountered, the statistics and specific issues are summarized in the tables below.</p> <table border="1"> <tbody> <tr> <td>Total Vehicle Runs</td> <td>1172</td> </tr> <tr> <td>Total passages with issues</td> <td>15</td> </tr> <tr> <td>Mis-classification</td> <td>2</td> </tr> <tr> <td>Missed vehicles</td> <td>0</td> </tr> <tr> <td>Missed tag reads</td> <td>0</td> </tr> <tr> <td>No correlation / split vehicles</td> <td>7</td> </tr> <tr> <td>Missing front image</td> <td>1</td> </tr> <tr> <td>Missing rear image</td> <td>5</td> </tr> <tr> <td>Missing both images</td> <td>0</td> </tr> <tr> <td>Vehicle Detection Rate</td> <td>100%</td> </tr> <tr> <td>Tag Read rate</td> <td>100%</td> </tr> <tr> <td>Tag correlation rate</td> <td>99.4%</td> </tr> <tr> <td>Image capture rate (all)</td> <td>99.49%</td> </tr> <tr> <td>Image capture rate (min 1 image/vehicle)</td> <td>100%</td> </tr> </tbody> </table> <p>Figure 18 - Core Scenario Data</p> <p>DOC# 02-01 REVISION 02 Page 24 of 35</p> <p>© Kapsch TrafficCom Canada Inc. 2012  These drawings and specifications contain confidential and proprietary information and are the property of Kapsch TrafficCom Canada Inc. and are issued in strict confidence and will be kept confidential and used solely for the purpose intended and for no other purpose and shall not be transmitted, reproduced, copied, and/or used as the basis for manufacture or sale of apparatus unless otherwise agreed to in writing by Kapsch TrafficCom Canada Inc.</p> <p>FILE: LBJ-NTE_TCS_FAT_REPORT_20180410_02-01 (2)DOCX 07/25/2014 3:27</p> </div>	Total Vehicle Runs	1172	Total passages with issues	15	Mis-classification	2	Missed vehicles	0	Missed tag reads	0	No correlation / split vehicles	7	Missing front image	1	Missing rear image	5	Missing both images	0	Vehicle Detection Rate	100%	Tag Read rate	100%	Tag correlation rate	99.4%	Image capture rate (all)	99.49%	Image capture rate (min 1 image/vehicle)	100%		
Total Vehicle Runs	1172																														
Total passages with issues	15																														
Mis-classification	2																														
Missed vehicles	0																														
Missed tag reads	0																														
No correlation / split vehicles	7																														
Missing front image	1																														
Missing rear image	5																														
Missing both images	0																														
Vehicle Detection Rate	100%																														
Tag Read rate	100%																														
Tag correlation rate	99.4%																														
Image capture rate (all)	99.49%																														
Image capture rate (min 1 image/vehicle)	100%																														
TP-020	<p><b>Baseline Test</b></p> <p>The Baseline Test will provide an initial validation of the System’s compliance with the Technical Requirements. The Baseline Test is not intended to be a performance test but rather an initial component level and end to end functional test of the System. The Baseline Test Plan shall include component level testing for</p>	X																													

Req ID	Plans and Testing (Section TP)	Required	Value Add
	<p>the following areas. In addition it shall demonstrate the end to end functionality of the System as it is available in its current state. External interfaces shall be used in all instances possible but simulated external interfaces or external interfaces may be used with Joint Board approval in this test phase. The Baseline Test shall be conducted at the Toll System Provider's test facility or factory environment. A simulated Roadside System or test facility may be used for the Baseline Test. The Baseline Test planning shall be an end to end view of all testing on the Project but the Baseline Test plan and procedures shall provide component level tests that exercise elements of each of the major functional systems below to demonstrate compliance with the Technical Requirements.</p> <p>The Baseline Test Plan shall, at a minimum, encompass the following areas:</p> <ol style="list-style-type: none"> <li>1. Roadside System Transaction creation, processing</li> <li>2. Roadside System degraded mode of operation and failure recovery</li> <li>3. System Monitoring (MOMS)</li> <li>4. Image Review</li> <li>5. IVR</li> <li>6. BOS ETC and Violations account management</li> <li>7. BOS, credit cards, Violations, collections and court processes</li> <li>8. Payment processes and exception management</li> <li>9. Toll Operations Center including all interfaces</li> <li>10. Payment processing for all available payment methods</li> <li>11. Customer Website</li> <li>12. Disaster recovery including failover of the BOS and CSC.</li> </ol> <p>This test must be successfully completed by the Toll System Provider and approved by the Joint Board before continuing to the next phase of testing.</p>		
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TP-020 , and this compliance is described below:</p> <p>Formal Project testing will be performed in a hierarchical bottom-up fashion, with individual components being fixture-tested first, followed by testing at increasing levels of system integration. All components/sub-systems must have successfully passed their specific tests before incorporation into the next level of integration. Accordingly, there is an order to the performance of the tests, and each test has a documented, step-by-step procedure. The component/sub-system under test is traceable by serial number through the entire test sequence. Based on that approach Kapsch will first execute the Baseline test.</p> <p>Kapsch will execute the Baseline Test in accordance with the requirements set forth in requirement TP-20. Kapsch will provide a detailed test plan for the Baseline Test that will include at a minimum:</p> <ul style="list-style-type: none"> <li>• Detailed description of Test Environment</li> <li>• Test scope</li> <li>• Test schedule</li> <li>• Test cases</li> <li>• Test scenarios</li> <li>• Test configuration (HW and SW)</li> <li>• Test environment / facilities</li> <li>• Test vehicles (as required)</li> <li>• User Interfaces</li> </ul> <p>After the completion of the Baseline Test, Kapsch will compile the results in a Baseline Test Report which will provide a summary of the test outcome and an analysis of the results. Kapsch will discuss the test results with the Joint Board during a Baseline Test Review Meeting including any remedial measures or retesting that might need to be accomplished. In addition to the Report, Kapsch will also make all raw data collected during the test available to the Joint Board.</p> <p>To simplify testing, components and sub-systems will be tested individually where feasible, to ensure the correct functioning of the component or sub-system in isolation. The test procedure at this level is designed to verify the component or sub-system is built to print, performs its intended function as specified, and is fit in all respects for integration into the next level of assembly. The subsequent testing at the next level of integration proceeds on the basis that the interconnected sub-</p>		

Req ID	Plans and Testing (Section TP)	Required	Value Add
	<p>systems are functional, and the next level of testing is therefore free to concentrate on the determination of correct interaction between sub-systems.</p> <ul style="list-style-type: none"> <li>I. Roadside System Transaction creation, processing (regular and degraded mode) <ul style="list-style-type: none"> <li>a. Component Level – ETC Component Reader</li> <li>b. Component Level – In-pavement loops</li> <li>c. Component Level – Overhead Lasers</li> <li>d. Component Level – VES Cameras</li> <li>e. Component Level – Overview Camera</li> <li>f. Component Level – Toll Zone Controller</li> <li>g. Component Level – Virtual Machines</li> <li>h. Component Level – Network Switches</li> <li>i. Component Level – Network Routers</li> <li>j. Subsystem Level – Vehicle Detection and Classification</li> <li>k. Subsystem Level – Image Capture</li> <li>l. Subsystem Level – ETC Transaction Read</li> <li>m. Subsystem Level – Traffic Transaction Creation</li> <li>n. Subsystem Level – Toll Zone to Facility Host Data Transmission</li> <li>o. Subsystem Level – Disaster Recovery</li> </ul> </li> <li>II. System Monitoring and incident management (MOMS) <ul style="list-style-type: none"> <li>a. Component Level – Database</li> <li>b. Component Level – Virtual Machines</li> <li>c. Subsystem Level – MOMS</li> </ul> </li> <li>III. The following subsystems will all follow the process indicated below in Acceptance Test Procedures <ul style="list-style-type: none"> <li>a. Image Review</li> <li>b. IVR</li> <li>c. BOS ETC and Violations account management</li> <li>d. BOS, credit cards, Violations, collections and court processes</li> <li>e. Payment processes and exception management</li> <li>f. Toll Operations Center including all interfaces</li> <li>g. Payment processing for all available payment methods</li> <li>h. Customer Website</li> </ul> </li> <li>IV. Disaster recovery including failover of the BOS and CSC. (in addition to Item III above) <ul style="list-style-type: none"> <li>a. Component Level – VM Cluster(s)</li> <li>b. Component Level – Data connections</li> </ul> </li> </ul>		
TP-021	<p><b>Pre-Production Controlled Test</b></p> <p>The Pre-Production Controlled Test shall occur after the configuration of the external interfaces and Business Rules for the TCS. The same test procedures may be used for the Pre-Production Controlled Test as are used in the Baseline Test, and the Pre-Production Controlled Test shall be conducted at the Toll System Provider’s test facility. With the exception of the Roadside System at the Project Sites, the Pre-Production Controlled Test shall use the configured interfaces for the System. The Pre-Production Controlled Test as it relates to the Roadside System shall reflect the System intended to be installed on the Project but shall be connected to the Toll System Provider’s test facility. Vehicles shall be run at speeds from 0 MPH to 65 MPH at the test facility to conduct the Pre-Production Controlled Test. A minimum of four Equipment Lanes shall be configured to conduct this test. It is also understood that the network connections may be different than the network planned for the Project but all interfaces shall be configured to operate in near-real- time as close to a production environment of the Project as possible. To allow for integration of the Roadside System to the ETC equipment, use of a single ETC reader integrated with the Roadside System is anticipated for the Baseline Test.</p>	X	



Req ID	Plans and Testing (Section TP)	Required	Value Add
	<p>This test must be successfully completed by the Toll System Provider and approved by the Joint Board before continuing to the next phase of testing.</p>		
	<p>Proposer Response:  Kapsch fully complies with requirement TP-021 , and this compliance is described below:  The scope of the Pre-Production Controlled Test will include all equipment provided or procured by Kapsch, and will demonstrate both individual sub-system correct operation and the successful integration of all sub-systems defined by the SOW and the Technical Requirements. All components and subsystems tested individually in the Baseline test will be used for the Pre-Production Controlled Test. To the maximum extent possible, we will utilize the same test procedures from the Baseline test using configured external interfaces. We anticipate performing this test at a Kapsch controlled test facility, currently planned in Saugerties, NY. After the completion of the Baseline Test and the BROR Kapsch will review the Baseline Test Cases to verify to what extent they can be reused for the Pre-Production Test. Following that review Kapsch will prepare the detailed Pre-Production Test Plan with the same content items listed above in response to requirement TP-020.</p> <div style="display: flex; justify-content: space-around;">   </div> <p>Figure 11-4 Kapsch Test Facility at Mosport, ON</p> <p>Figure 11-5 Kapsch Test Facility in Saugerties, NY</p> <p>After the completion of the test Kapsch will compile the results in a Pre-Production Test Report which will provide a summary of the test outcome and an analysis of the results. Kapsch discuss the results and findings of the test with the Joint Board during a Baseline Test Review Meeting. In addition to the report, Kapsch will also make all raw data collected during the test available to the Joint Board  Both test facilities meet the speed requirements of 0-65MPH and have space for a minimum of four fully equipped toll lanes as set forth in the RFP. Kapsch has executed similar tests at these facilities: Mosport has been used for E-ZPass testing and the Saugerties facility has already hosted tests for the NYSTA System Testing and for internal testing on the LBJ-NTE Managed Lanes Project. Based on those testing activities at the sites Kapsch has put suitable network connections in place to conduct the Pre-Production Controlled Test with a network configuration that will be configured to operate in near real-time close to the planned production environment.</p>		
TP-022	<p><b>BOS Production Readiness Test</b>  The BOS Production Readiness Test shall be the same as the Pre-Production Controlled Test as it relates to the BOS, but shall be conducted with all final components required for revenue service. No simulated interfaces may be used in the BOS Production Readiness Test, except those simulating roadside Transactions. The same test procedures used for the Baseline Test shall be used for the BOS Production Readiness Test, but without the use of simulators.</p> <p>The BOS Production Readiness Test shall verify that the following conditions are met:</p>	X	

Req ID	Plans and Testing (Section TP)	Required	Value Add
	<ul style="list-style-type: none"> <li>• The BOS is available and functioning properly, including BOS Hardware and network communications, and each component of the BOS is available to collect revenue, receive information from the Roadside System, process information and Transactions correctly and provide customer service operations.</li> <li>• Transactions successfully processed through the BOS and then successfully moved to the appropriate Transaction route in the BOS solution. The routes the Transactions may take, shall result in a rate assignment for each Transaction and association of the correct customer account for that Transaction, or the BOS shall send the Transaction through the video process to either associate with a known account or proceed to identify the Transaction to an appropriate vehicle owner. The distribution of Transaction types will be agreed upon by the Toll System Provider and the Joint Board.</li> <li>• The methodology pursuant to which the Toll System Provider shall report upon its compliance with the SLAs has been approved by the Joint Board.</li> <li>• BOS-related network communications have been tested and are successfully operating.</li> <li>• All required interfaces and file transfers have been tested and are successfully operating for required interfaces, including interoperable interfaces.</li> <li>• The CSC must be open and operational and able to provide all customer service functions as required in Section CS of the Technical Requirements. The test shall demonstrate that the IVR and Customer Website are operational and comply with Business Rules and PCI DSS compliance rules and regulations. All cash handling operations must be verified and ensure compliance with all rules and regulations as well as all other payment processing procedures.</li> <li>• All Correspondence capabilities shall be reviewed, verified and validated, including the: <ul style="list-style-type: none"> <li>○ Ability to process all types of invoices including pay-by-plate, Violations, collections and final collection,</li> <li>○ Ability to process Violations through court documentation preparation and procedures,</li> <li>○ Ability to process Customer Website Correspondence,</li> <li>○ Ability to process different types of Transactions, payments, and Violations through the IVR, and validate the IVR system, and</li> <li>○ Ability to meet all deadlines and response times established in the Contract Documents and Business Rules.</li> </ul> </li> <li>• All TCS reporting and monitoring are operational and have begun to collect data from different components of the TCS. Report formatting and report generation are complete. Typical responses to system incidents have been outlined and tested.</li> <li>• Media data submission and reporting have been developed and approved by the Joint Board for daily, weekly and monthly submissions.</li> </ul> <p>This test must be successfully completed by the Toll System Provider and approved by the Joint Board before continuing to the next phase of testing.</p>		
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TP-022 , and this compliance is described below:  Kapsch will take the same methodological approach to the BOS Production Readiness Test as to the Pre-Production Readiness Test on the Roadside. The Test Environment for the BOS Production Readiness Test will be set up in the final BOS location in the Kapsch Team's facility in Austin. Kapsch shall use no simulated interfaces except for simulated roadside transactions if necessary. In this test Kapsch will verify:</p> <ul style="list-style-type: none"> <li>• BOS availability and component functionality including all hardware and network components</li> <li>• Transaction Processing and rate assignment</li> <li>• SLA reporting</li> <li>• BOS interface functionality</li> <li>• CSC availability of all required functions including: <ul style="list-style-type: none"> <li>○ A. Invoice processing including pay-by-plate, Violations, collections and final collection</li> <li>○ B. Violation Processing through courts</li> <li>○ C. Customer website correspondence</li> <li>○ D. Payment Processing thru different types of Transactions, payments, and Violations through the IVR, and validate the IVR system</li> <li>○ E. Response deadlines are met per defined business rules</li> </ul> </li> <li>• TCS Reporting and monitoring</li> <li>• Media data submission and reporting</li> </ul> <p>After the completion of the test Kapsch will compile the results in a BOS Production Readiness Test Report which will provide a summary of the test outcome and an</p>		

Req ID	Plans and Testing (Section TP)	Required	Value Add								
	analysis of the results. Kapsch discuss the results and findings of the test with the Joint Board during a Baseline Test Review Meeting. In addition to the report, Kapsch will also make all raw data collected during the test available to the Joint Board										
TP-023	<p><b>System Production Readiness Test</b></p> <p>The System Production Readiness Test shall be the same as the Pre-Production Controlled Test but shall be conducted with all final components required for revenue service and using the Project Toll Zones and vehicles and customer accounts at the LSIORB Project Toll Zones in Kentucky or Indiana. No simulated interfaces may be used in the System Production Readiness Test. The same test procedures used for the Baseline Test may be used for the System Production Readiness Test, but without the use of simulators. This test shall be conducted for the Temporary Downtown Traffic Configuration, East End Bridge, and the Final Downtown Traffic Configuration.</p> <p>The System Production Readiness Test shall be performed prior to live traffic conditions to verify that the System is ready to open to traffic and verify preparedness for toll collection activities. The TCS is considered ready to open to traffic and able to collect revenue when the following conditions are met:</p> <ul style="list-style-type: none"> <li>• The TCS is available and functioning properly, including System Hardware and network communications, and each component of the TCS is available to collect revenue, receive information from the Roadside System, process information/Transactions correctly and provide customer service operations.</li> <li>• The System is able to successfully identify from the Roadside System equipment that a Transaction has occurred through either Transponder identification or license plate identification. The Transaction should successfully process through the Roadside System and then successfully move to the appropriate Transaction route in the BOS solution and the TOC. The route the Transactions may take are varied depending upon the System but should result in a rate assignment for each Transaction, associate the correct customer account for that Transaction, or the System shall send the Transaction through the OCR process to either associate with a known account or proceed to identify the Transaction to an appropriate vehicle owner. The System shall be capable of performing these functions for 1100 Transactions of varying types encompassing all Transaction types prior to Tolling Readiness. The distribution of Transaction types will be agreed upon by the Toll System Provider and the Joint Board.</li> </ul> <p>The Toll System Provider is prepared to collect data per the agreed upon methodology upon Revenue Service. The methodology to measure SLAs has been established, the methodology to report Performance Requirements and the reporting tools and medium has been agreed upon by the Joint Board and the Toll System Provider</p> <p>Network communications have been tested and are successfully operating.</p> <p>All required interfaces and file transfers have been tested and are successfully operating for required interfaces, including interoperable interfaces.</p> <p>This test must be successfully completed by the Toll System Provider and approved by the Joint Board before continuing to the next phase of testing.</p>	X									
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TP-023 , and this compliance is described below:</p> <p>Kapsch will execute the System Production Readiness Test in accordance with the Requirements described in TP-022. The detailed Test Plan for the System Production Readiness Test will include the final configuration showing that no simulators have been used and actual interfaces are applied. In addition the test plan will include all items listed in the previous test. The System Production Readiness Test is critical in that it ensures that the system, including the RSS, the Network communications, interfaces and transfers, and all CSC functions are functioning properly and are ready for revenue collection. The following table demonstrates the deliverables depicted in TP-022. Kapsch will execute all deliverables as defined within the Technical Requirements TP-022.</p> <table border="1"> <thead> <tr> <th>Technical Requirement</th> <th>Kapsch Compliance</th> </tr> </thead> <tbody> <tr> <td>System Production Readiness Test</td> <td></td> </tr> <tr> <td>Conducted with all final components required for revenue service</td> <td></td> </tr> <tr> <td>Using the Project Toll Zones</td> <td></td> </tr> </tbody> </table>	Technical Requirement	Kapsch Compliance	System Production Readiness Test		Conducted with all final components required for revenue service		Using the Project Toll Zones			
Technical Requirement	Kapsch Compliance										
System Production Readiness Test											
Conducted with all final components required for revenue service											
Using the Project Toll Zones											

Req ID	Plans and Testing (Section TP)	Required	Value Add			
	<ul style="list-style-type: none"> <li>Using Vehicles and customer accounts</li> <li>No simulated interfaces</li> <li>Same test procedures used for the Baseline Test</li> <li>Use first available Toll Zone full configuration</li> <li>Performed prior to live traffic conditions</li> <li>Prove Transaction traceability on 1100 Transactions of varying types</li> <li>Demonstrate agreed upon methodology for data collection for Revenue Service</li> <li>Network Communication previously Tested and Successfully Operating</li> <li>CSC, including IVR and website, open during testing</li> <li>Compliance with Business Rules and PCI DSS</li> <li>OCR and Image review processed verified</li> <li>Cash handling operations verified</li> <li>All payment processing procures verified</li> <li>Correspondence capabilities verified including invoicing by plate, Violations, collections, and court systems</li> <li>Correspondence capabilities verified via Customer Website</li> <li>Correspondence capabilities verified through all types of Transactions in a timely manner</li> <li>All TCS reporting and monitoring are operational</li> <li>Reports are finalized</li> <li>Incident responses processes defined and tested</li> <li>Data and reporting submission methods agreed upon with Joint Board</li> <li>Recurring submissions agreed upon with Joint Board</li> </ul>					
	<p>Kapsch will conduct the System Production Readiness Test at the first available toll zone. Kapsch will furnish the required testing infrastructure including vehicles, drivers, etc. The test will be scheduled and conducted in close coordination with the Joint Board and the Design and Build Contractors to avoid any impact on final civil works of the system and to ensure a safe worksite environment. After the completion of the test Kapsch will compile the results in a System Production Readiness Test Report which will provide a summary of the test outcome and an analysis of the results. Kapsch discuss the results and findings of the test with the Joint Board during a System Production Readiness Test Results meeting. In addition to the Report, Kapsch will also make all raw data collected during the test available to the Joint Board.</p> <p>As part of the start of Revenue Service for each of the Roadway elements, an Operational Test will be conducted. The operational test will be conducted during live traffic in order to measure the acceptability of the TCS (Roadside to Back Office). This Acceptance Testing will be conducted with a known set of vehicles, and accounts, in different configurations (valid accounts, valid tags, valid plates, invalid tags and plates, accounts with low and/or negative balances, and tags/plates on other E-ZPass agency accounts). The Operations Test for the BOS, CSC and TOC will be conducted after the first bridge commences Revenue Service.</p> <p>The specifics of this testing will be detailed and presented in the MTCP, and will cover the required items listed in TP-023. The results of this testing will be gathered and analyzed daily, and reported out on a weekly basis. The goal is to meet or exceed the required performance specifications. As provided in the MTCP, results will be reported to the Joint Board, weekly, during the test period. The results will be used to assess the performance of the system, and to note any exceptions. In the case of results showing that a performance requirement is not being met, an analysis will be performed as to the underlying cause. Any corrections will be made, after consultation with the Joint Board, and the testing period will resume.</p>					
	TP-024			<p><b>Operations Tests</b>  The Toll System Provider shall conduct four Operations Tests: i) a BOS, CSC, TOC operations test, ii) Temporary Downtown Traffic Configuration iii) East End Bridge, and the iv) Final Downtown Traffic Configuration. Each Operations Test shall be a live Operations Test of the System using controlled and live test vehicles and accounts to demonstrate that the TCS operates within the approved Business Rules and Technical Requirements. The Toll System Provider shall conduct this operations test for a minimum of 120 days after the commencement of Revenue Service for each Bridge including the BOS. The Operations Test for the BOS, CSC,</p>	X	

Req ID	Plans and Testing (Section TP)	Required	Value Add
	<p>and TOC shall be conducted after the first bridge commences Revenue Service. The Operations Tests shall verify the following elements on a weekly basis be submitted no more than 2 business days after the conduct of the test.</p> <p>The Operations Test requirements shall be addressed in the MTCP but should include the following at a minimum:</p> <ol style="list-style-type: none"> <li>1. ETC and Image Transaction Creation and flow and posting to all 10 test accounts and trace Transactions in at least 10 production accounts selected by the States' Parties to ensure Transactions are created, posted and processed according to requirements.</li> <li>2. Test IVR to make payments, and exercise the IVR tree to ensure information is available to the customer per the specified Business Rules.</li> <li>3. Test Customer Website to validate invoice information is available and makes payments and validate that the website is available and operating in accordance with the Business Rules and requirements.</li> <li>4. Validate payment processing for credit cards, checks, retail centers, and lockbox posting.</li> <li>5. Validate Violation escalations, invoice information presented on the account, escalation to collections and court. The escalation configurable periods used for collections and court may be manually adjusted but the escalated configurable periods for Customer Statements must use the configured production System times.</li> <li>6. Confirm all payments and Transactions for test accounts and selected production accounts are reflected properly in the financial reports and any financial records transmitted to the accounting system provided by others.</li> <li>7. Confirm all interoperable accounts and Transactions are posting in accordance with E-ZPass rules and funds are reconciled within the TCS.</li> <li>8. Monitor and record all incidents, and report all priority 1 incidents to the Joint Board with resolution plan including a root cause analysis.</li> </ol> <p>This test must be successfully completed by the Toll System Provider and approved by the Joint Board before continuing to the next phase of testing.</p>		
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TP-024 , and this compliance is described below:</p> <p>Kapsch will conduct the four required Operations Test by supplementing the live traffic additional controlled test vehicles. In the Operations Test Plan Kapsch will suggest the exact number of test vehicles and splits between vehicle classes, account types and preferred payments methods in order to ensure that the controlled test vehicles reflect a representative sample of the regular traffic on the overall system. This vehicle mix together with the overall Operations Test Plan is subject to review and approval by the Joint Board and its representatives.</p> <p>Kapsch will also lay out specific test cases and methodologies for each of the eight required element the Operations Test has to verify. The test cases will cover the following areas:</p> <ol style="list-style-type: none"> <li>1. ETC and Image Transaction Creation: Develop a schedule for sample selection of ETC and Image transactions to cover various types of day, day of the week, all vehicle classes and a representative mix of transactions types (ORB accounts with TDM tags, ORB accounts with 6C tags, E-ZPass transaction, image transactions, etc.)</li> <li>2. IVR Payments: Scripts for different scenarios of IVR payments including violation notices at different times of day, days of the week, etc.</li> <li>3. Test Costumer Website: Scripts for different scenarios of the customer website payments, account information, invoice availability for various types of accounts and transactions at different times of day, days of the week, etc.</li> <li>4. Validation of payment Processing: A set of test scripts to validate credit card and check payments online, at the Walk Up Centers and the CSC.</li> <li>5. Validation of Violation Escalation: A set of test scripts to validate the escalation of different types of violations including collections procedures and court processes per pre-defined business rules.</li> <li>6. Financial Reporting: Production of all required financial reports to show processed payments per the pre-defined processes and business rules.</li> <li>7. Interoperability: Use live traffic and test accounts to show interoperability transaction collection between the Joint Board and the different E-ZPass CSCs in both directions using actual live interfaces.</li> <li>8. Monitoring and Incident Management: Daily and weekly MOMS reports showing all events, alarms and incidents on the TCS including detailed reports on all Priority 1 incidents with the alarm type and a detailed step-by-step account of the incident handling and close-out process taken by the TSPs maintenance team.</li> </ol> <p>During the Operational Test Kapsch will prepare a weekly overview report showing the preliminary results of all test scenarios and processes and schedule a review</p>		

Req ID	Plans and Testing (Section TP)	Required	Value Add
	meeting with the Joint Board to address any issues or question. A final report of each Operations Test will be prepared after the completion of the 120 day test period. The final report will include the test results and all data collected during the Operations Test for the Joint Boards review and approval.		
TP-025	<p><b>System Acceptance Test (SAT)</b>  The System Acceptance Test will be performed in live traffic conditions after all the Bridges have been opened for Revenue Service. SAT will be performed to ensure that the TCS functions as required by the Technical Requirements, the Guaranteed Performance Requirements as provided in Exhibit N of the Agreement, and all other requirements of the Contract Documents. The purpose of the SAT is to validate that the Roadside System equipment identifies the Traffic Transactions properly and collects the appropriate data, the BOS solution successfully processes that data, and the customer service operations perform as required to support the needs of the toll patrons while supporting maximum revenue collection with minimum leakage at the required service levels. SAT will be performed after numerous component tests occur as listed in TP 020-025 of the Technical Requirements (Appendix C). SAT will verify that the overall TCS, including Hardware and Software, performs at the required service levels and at the required throughput.</p> <p>In order for SAT to be requested and agreed upon by the Joint Board, SAT will be performed after all outstanding trouble tickets other than those with respect to immaterial items that don't affect System functionality have been resolved; all prior operational component testing is complete as outlined in Technical Requirements TP-020, TP-021, TP-022, TP-023, and TP-024 and accepted; and an established methodologies have been utilized for a first collection of the data required to measure compliance with Performance Requirements. SAT testing will occur after the completion of the Operations Tests and will run for a period of 48 hours of roadside traffic operations and for a period of 60 days for all TCS components and operations.</p> <p>SAT will verify that:</p> <ul style="list-style-type: none"> <li>• Each component of the TCS is available and performing to the required Performance Requirements in TR Section PR</li> <li>• All processes and work flows will be verified including but not limited to WF-001 through WF-016.</li> <li>• Ensure compliance with all Business Rules.</li> <li>• System network and system architecture requirements have been successfully implemented, completed, tested, verified, validated and performing and are available for use by the Joint Board's TCS. Test and verify timeliness of response to potential network and communications failure.</li> <li>• Test the disaster recovery systems and test the Disaster Recovery System Plan.</li> <li>• Ensure Transaction record accuracy has been achieved at all Toll Zones. Traffic Transactions and Event Transactions from each Toll Zone will be reviewed, verified and followed to each end state of the Transaction.</li> <li>• BOS requirements have been successfully implemented, completed, tested, verified, validated and are performing and available for use by the Joint Board's TCS through account sampling, setup, verification, and validation.</li> <li>• Toll Operations Center and system monitoring have been successfully implemented, completed, tested, verified, validated and are performing and available for use by the Joint Board's TCS. Test system messaging and response times to different message types and ensure timeliness and responsiveness of operation and maintenance staff.</li> <li>• All Correspondence capabilities will be reviewed, verified and validated including the ability to process all types of invoicing including registered and unregistered license plate accounts, Violations, collections and final collection process through court documentation preparation and procedures; Ability to process Customer Website Correspondence, and the ability to process different types of Transactions by IVR, process payments, process Violations and validate the IVR system.</li> </ul> <p>CSC operations will be fully reviewed to ensure all SLAs are met including all requirements as outlined in Section CS of the Technical Requirements including the additional items below: 1) Verification of live call handling by CSRs, 2) Secret shopping to the Walk-up Centers and remote operations (if implemented), 3) Random spot check and review of lockbox and lockbox compliance with operational procedures and 4) Confirm and test money handling procedures at each retail location and/or remote locations (if applicable).</p> <p>The SAT will also verify the following:</p> <ol style="list-style-type: none"> <li>1. Review HR policies and HR procedures of all staff on the TCS team to ensure the policies and procedures are followed in accordance with the Joint Board</li> </ol>		

Req ID	Plans and Testing (Section TP)	Required	Value Add
	<p>approved Toll System Provider policy.</p> <p>2. Confirm that all transfers of files and interfaces to all outside systems are tested, validated, and are functioning according to requirements. Process file transfer in near-real-time and verify transfer of data with outside interfaces</p> <p>3. Financial transfers of funds are occurring timely with maximum availability of cash funds to the Joint Board on a daily basis with concise, timely, and precise reconciliation of all funds, accounts, sub ledgers, etc.</p> <p>4. Confirm that all interoperable accounts are handled and processed in a timely manner and ensure all interoperable Transactions are processed according to each interoperable agency's agreed upon Business Rules and operational agreements. 100 interoperable Transactions will be traced and verified and validated throughout the TCS to final financial reconciliation from each interoperable agency.</p> <p>The SAT must be successfully completed by the Toll System Provider and Approved by the Joint Board before being granted Final System Acceptance</p>		
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TP-025 , and this compliance is described below: Per the requirements of TP-024, Kapsch will perform the SAT verifying the following:</p> <ol style="list-style-type: none"> <li>1. Review HR policies and HR procedures of all staff on the TCS team to ensure the policies and procedures are followed in accordance with the Joint Board approved Toll System Provider policy.</li> <li>2. Confirm that all transfers of files and interfaces to all outside systems are tested, validated and are functioning according to requirements. Process file transfer in near-real-time and verify transfer of data with outside interfaces</li> <li>3. Financial transfers of funds are occurring timely with maximum availability of cash funds to the Joint Board on a daily basis with concise, timely, and precise reconciliation of all funds, accounts, sub ledgers, etc.</li> <li>4. Confirm that all interoperable accounts are handled and processed in a timely manner and ensure all interoperable Transactions are processed according to each interoperable agency's agreed upon Business Rules and operational agreements. 100 interoperable Transactions will be traced and verified and validated throughout the TCS to final financial reconciliation from each interoperable agency.</li> </ol> <p>Kapsch will execute the SAT as a complete system audit performed by a separate team that was not involved in the delivery of the system, allowing for an objective evaluation of the system and its performance.</p> <p>We understand the importance of the Systems Acceptance Test which demonstrates, under live conditions over an extended period, that all processes and workflows are verified, all system elements have been successfully implemented, that transaction accuracy has been achieved, all elements of the BOS operate as required, and that operations are being performed to KPI standards and according to the project's Business Rules.</p> <p>Kapsch will conduct the SAT in accordance with the Requirements set forth in TP-024 using the final operational system to verify that the Toll System and operations fully perform up to the technical Requirements set forth in the RFP.</p> <p>Kapsch will provide a detailed Test Plan to the Joint Board detailing the verification criteria, measurement methodology, required sample data composition, sample size and performance calculation method for each individual requirement.</p> <p>During the execution Kapsch will export system data straight from the BOS and the toll zone controllers and evaluate the data by reviewers not located within the CSC or the TOC who are not involved in the ongoing system operation.</p> <p>During the 60-day test period Kapsch will provide the Joint Board weekly updates on the system performance and discuss any appearing issues immediately. After the completion of the test Kapsch will compile the results in a System Acceptance Test Report which will provide a summary of the test outcome and an analysis of the results. Kapsch discuss the results with the Joint Board during a SAT Review Meeting. In addition to the Report, Kapsch will also make all raw data collected during the test available to the Joint Board.</p>		
TP-026	<p><b>Document Reviews</b></p> <p>The Toll System Provider shall plan for 2 document reviews for submittals and allow for 10 day review cycles by the Joint Board for all documents submitted for Joint Board Review and approval. No new comments are expected after the second cycle but additional review cycles may be required if the Joint Board's comments are not addressed in the first two review cycles to the Joint Board's satisfaction . All documents shall be provided in PDF and native versions including MS Office,</p>	X	

Req ID	Plans and Testing (Section TP)	Required	Value Add
	AutoCAD, Visio or other similar products.		
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TP-026 , and this compliance is described below:  Joint Board input is critical to the success of the LSIORB project and, as such, the Kapsch Team has included two document review cycles for all documents submitted for review.  Kapsch will also prepare a Document Control Plan as part of the overall Project Management Plan that defines Kapsch's document approval process in detail. The high-level process I shown below:</p>		



# Document Approval Process

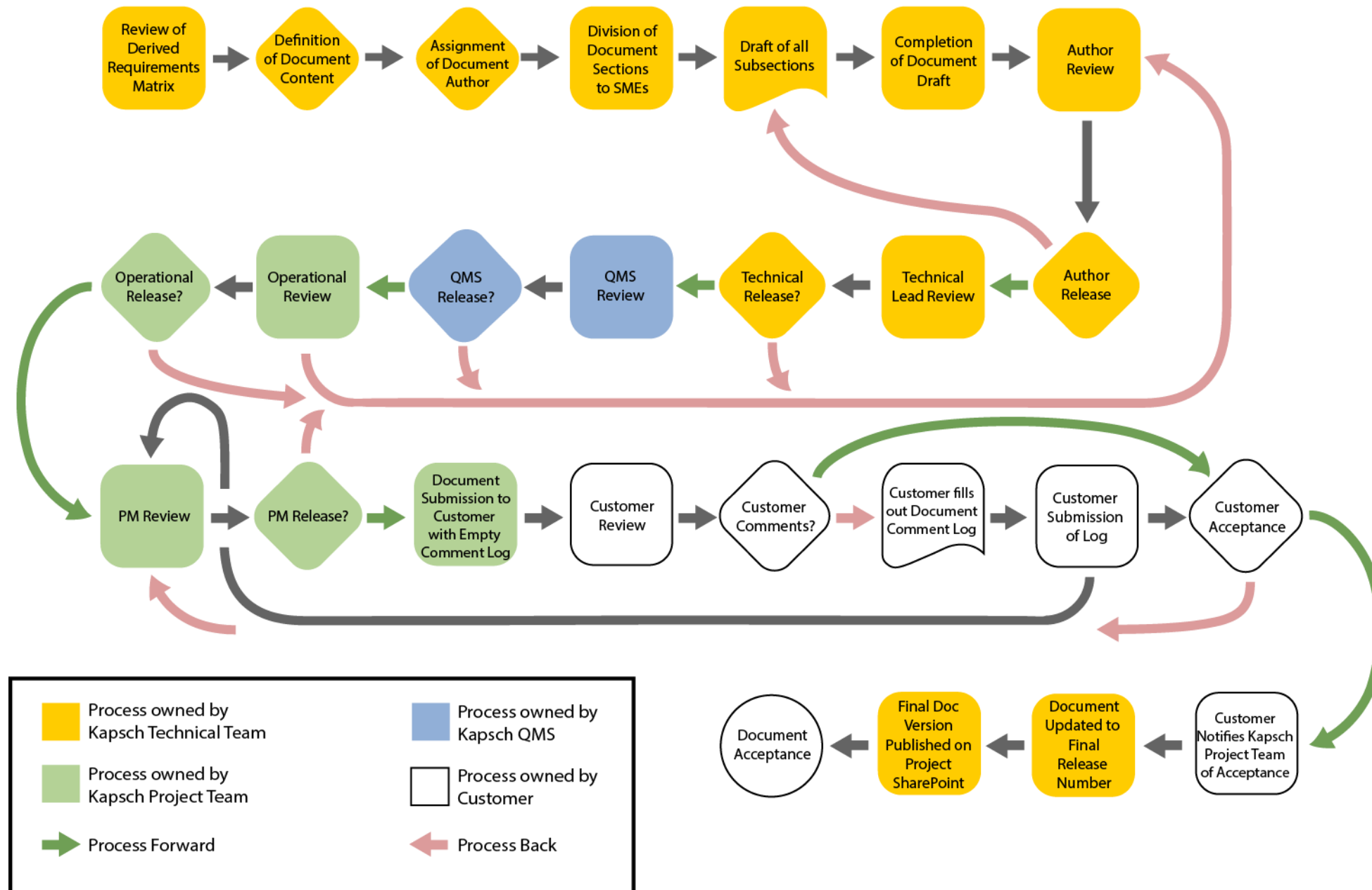


Figure 11-6 Kapsch Document Review Process

Req ID	Plans and Testing (Section TP)	Required	Value Add
TP-027	<p><b>Maintenance of Traffic Plan</b></p> <p>The Toll System Provider shall be responsible for the planning and implementation and removal of lane closures for toll equipment preventative or emergency maintenance. The Toll System Provider shall utilize the most current state traffic control plans and standards applicable to the Toll Zone. The Toll System Provider shall request lane closures in writing and accordance with the applicable state policy. Any preventative maintenance lane closures must be requested in writing at least 14 calendar days in advance. Emergency lane closures shall be requested with 12 hours prior written notice. Notice of any immediate lane closures shall be communicated to the Joint Board representative via phone and email as soon as possible. The Toll System Provider shall include a unit price for each of the traffic control configurations outlined in the price proposal. The Joint Board will reimburse the Toll System Provider for each authorized lane closure required during installation and maintenance of traffic, excluding closures in excess of the limited number of hours established by the Contract for maintenance, unless the reason for closure was outside the Toll System Provider's control.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TP-026 , and this compliance is described below:</p> <p>Kapsch will manage the planning, implementation and removal of all Maintenance of Traffic. As part of the Project Management Plan Kapsch will submit an overall MOT plan that will include a sample traffic control plan and a detailed process for Maintenance of Traffic by Kapsch. The company will take into account all requirements, rules and regulations in Kentucky and Indiana.</p> <p>Kapsch will manage the planning, implementation and removal of all Maintenance of Traffic. As part of the Project Management Plan Kapsch will submit an overall MOT plan that will include a sample traffic control plan and a detailed process for Maintenance of Traffic by Kapsch.</p> <p>PAC Addition: All MOT within the Kapsch Team will be handled by its maintenance team and will be directly managed by the Roadside System Maintenance Manager. All MOT incidents will be tracked as a separate Word Orders in the Kapsch MOMS where they will be scheduled and tracked with the following information at a minimum:</p> <ul style="list-style-type: none"> <li>• Date when MOT was scheduled</li> <li>• Information on who requested the MOT</li> <li>• Reason for MOT</li> <li>• Information on who scheduled the MOT</li> <li>• Date &amp; Time of MOT</li> <li>• Location of MOT</li> <li>• Number of closed lanes</li> <li>• Toll Revenue Impact (Y/N)</li> <li>• Assigned owner of MOT</li> <li>• Status of MOT (requested / scheduled / in-progress / completed)</li> <li>• Room for Comment to note special events related to the MOT</li> </ul> <p>Logging all MOT in MOMS this way enables the Joint Board to track MOT activities and pull customized reports on the TSPs MOT activity. Using the scheduling feature of MOMS allows Kapsch to schedule preventative Maintenance and related MOT well in advance. In currently existing projects, such as the LBJ Managed Lanes Project, such these Work Orders are scheduled reliably multiple months in advance which enables Kapsch to meet the Joint Boards requirement to request related MOT 14 calendar days prior:</p>		

Req ID Plans and Testing (Section TP)

Required Value Add

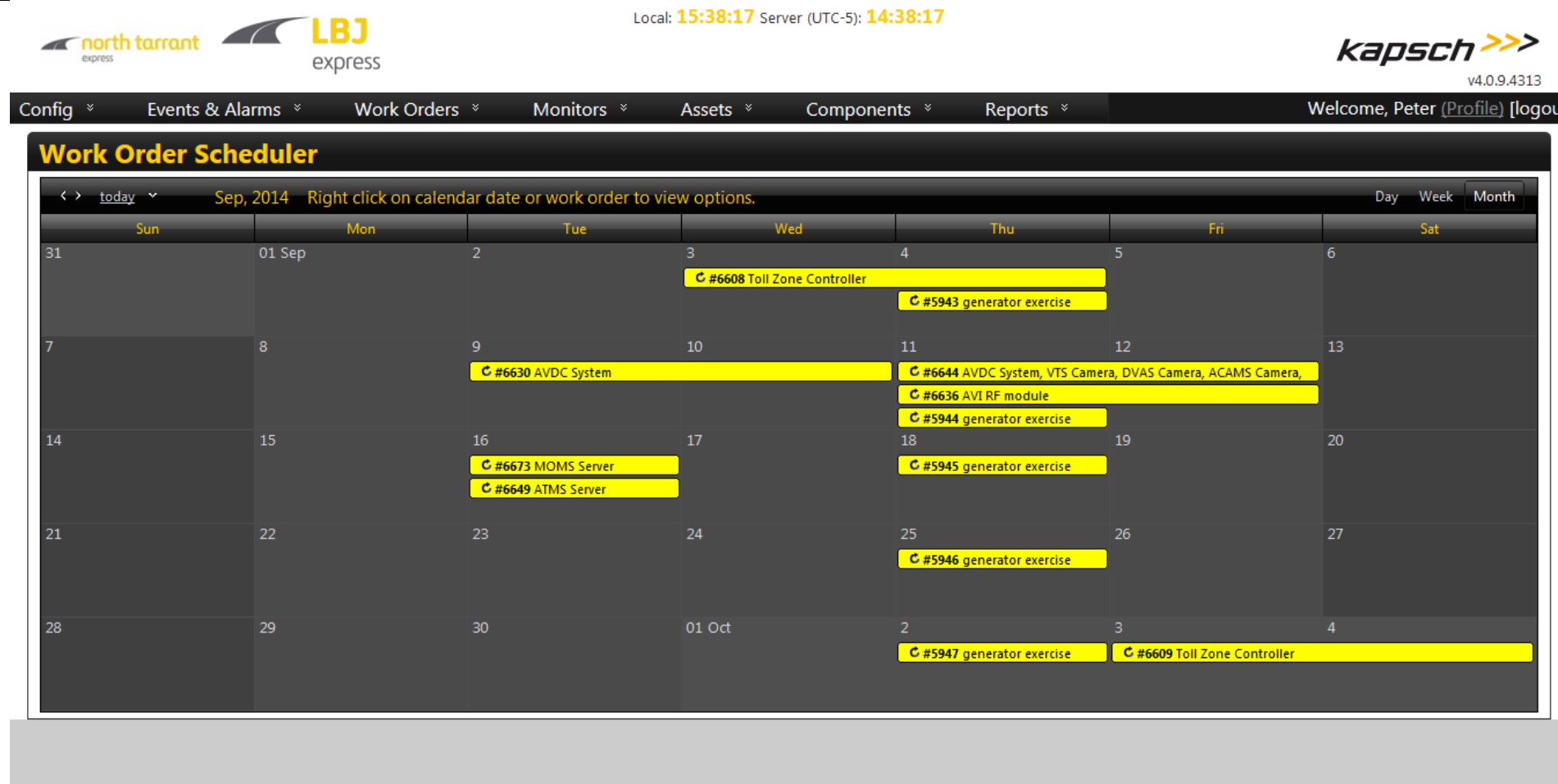


Figure 11-7 Work Order Scheduler from LBJ-NTE Project - Showing Preventative Maintenance Schedule for September 2014 (Actual)

The scheduling of MOT for emergency maintenance is part of the standard work flow applied by Kapsch for Maintenance Processes. The work-flow for the LSI ORB project will take the 12-hour notice requirement into account to ensure that Kapsch fully complies fully with requirement TP-026. Kapsch will contract the MOT execution out to local certified MOT providers in Kentucky and Indiana to ensure full compliance with all state and local laws and regulations related to Maintenance of Traffic.

TP-028

**Incident Management Coordination**  
 States' Parties have two separate, but coordinated traffic management centers (TMC) to manage traffic incidents in each respective state and jointly coordinate incidents that impact both states. INDOT has a state operated traffic management center and KYTC contracts its traffic management services through TRIMARC in the Louisville Metropolitan area. It is anticipated that the designated Traffic Management Centers in KY or IN will notify the Toll System Provider by email and phone of incidents that occur that may impact tolling which may or may not require suspension. INDOT and KYTC TMC's are responsible for all incident management and will notify the Toll System Provider of any incidents within proximity of the Toll Zone by email. The Toll System Provider shall establish, maintain and support a dedicated phone line and maintain the phone system used for coordination with the traffic management centers. This phone number shall be a toll free number and shall be established at least 9 months prior to Tolling Readiness Date. No system to system integration or interface is required for the TMC. Phone, email and one way really simple syndication feeds shall be configured for the TMC operations.

X

Proposer Response:  
 Kapsch fully complies with requirement TP-027 , and this compliance is described below:

Req ID	Plans and Testing (Section TP)	Required	Value Add
	The Kapsch Team has vast experience in Incident Management Coordination working with state agencies in Texas and worldwide. Kapsch will establish the required toll free phone line for IDOT and KYTC to report traffic incidents and will support e-mail notification and one-way syndication feeds. The phone line will be managed by Kapsch's TOC and will be staffed on a 24/7 bases. Kapsch will also work closely with the Joint Board, INDOT and KYTC to optimize work flows related to Incident Management. The outcomes of these discussions and related processes will be reflected in the Incident Management Plan.		
TP-029	<b>CSC Operations Plan (separate from BOS)</b> The Toll System Provider shall provide a Security and Access Control Plan for CSC, Lockbox Operation Staffing and Operational Plan, Training Program for CSC staffing, Organizational Chart for all staffing of CSC, Employment Policy for CSC employees and HR Policy and HR Benefits plan <b>no later than 180 days after NTP</b> . It is intended that the Toll System Provider provide these plans for the Joint Board review. No approval or comments are anticipated. However, due to federal requirements and funding on the Project, the Joint Board may provide comments on elements that are applicable to federal or state law.	X	
	Proposer Response: Kapsch fully complies with requirement TP-028 , and this compliance is described below: Kapsch and its partner MSB will prepare a separate Access Control Plan for the CSC, Lockbox Operation Staffing and Operations based on MSB's existing procedures ad operations that are supporting projects in Texas, California and Florida and have been previously approvals with regards to their conformance and federal law and the state law in the respective states. The plan will be modified to describe in detail the operations of the LSI ORB project and will take into account the specific laws and regulations of the state of Indiana and the Commonwealth of Kentucky.		
TP-030	<b>Walk-up Center Build out Plan</b> The Toll System Provider shall provide a Walk-up Center Plan <b>no later than 90 days after NTP</b> . This Walk-up Center Plan shall identify the overall scope and construction and operational opening schedule for the Walk-up Centers as well as lease information, layout functions and deployment approach, and required marketing information needed from the Joint Board.	X	
	Proposer Response: Kapsch fully complies with requirement TP-029 , and this compliance is described below: Kapsch has nearly completed the search and pre-selection process for the Walk-Up Centers in Indiana and Kentucky per the RFP requirements and <b>Kapsch shall provide a detailed Walk-up center plan to the Joint Board at NTP</b> . Kapsch will work closely with the Joint and Board and its selected marketing service provider to select and deliver the best possible Walk-up Center locations and configurations to the Joint Board. The selection, installation and integration of the Walk-Up Centers are the responsibility of the Kapsch Roadside System Project Manager and his local team in the Louisville area. The Walk-up Center Plan will a present a detailed synopsis of how each of the two Walk-up Centers (one on each side of the river) will be retained, developed and opened for live operations, including: <ul style="list-style-type: none"> <li>• commercial leases to be executed</li> <li>• site plans that demonstrate external features at each Walk-up Center, including drive-way access, available parking, public and private entrances, covered porticos (if appropriate), external signs, provisions to ensure access to the handicapped, landscaping, lighting and security systems, as well as an inset that identifies the specific location of each Walk-up Center in the community</li> <li>• Build-out plans for each walk-up Center that show:               <ul style="list-style-type: none"> <li>• a public entrance, greeting and queuing area, customer service counter, public interface CSR workstations, information signs, furniture, decor and lighting</li> <li>• a secure space to sustain CSR operations not directly interfacing with walk-in traffic, including, a supervisor's work-station, one or more additional CSR work-stations to sustain other local CSR activities and serve other CSR functions on an as-needed basis, a space for CSRs to close their shifts, count money and conduct other secure activities such as transponder verifications and commercial sales package preparation, a safe to secure funds and transponders and space to store office supplies and other consumables</li> <li>• public and private rest rooms facilities, including baby-changing stations in the public rest rooms</li> <li>• facilities to sustain staff personal needs, including a kitchenette with refrigerator, micro-wave, coffeemaker and other basic appliances to allow staff to store perishables, prepare and enjoy a meal or rest while on break</li> <li>• equipment that will be installed at each location, including toll systems (the location where hardware will be installed and anticipated functions to be supported at each location), heating, air conditioning and ventilation systems, site-access and control systems, their anticipated function (e.g. monitoring entrance or money counting area). and communications</li> </ul> </li> </ul>		

Req ID	Plans and Testing (Section TP)	Required	Value Add
	<ul style="list-style-type: none"> <li>an implementation plan that presents the estimated cost and a schedule for the development of each site and space, including procuring materials, contractors to conduct the work, securing the necessary permits, communications and other utilities, managing and inspecting the improvements at each location</li> <li>marketing and other information that will be required from the Joint Board (e.g. details of all signing, color themes and other public interface metrics) to ensure a consist public message at both locations</li> </ul>		
TP-031	<p><b>Monthly Operations and Maintenance Report</b>  Monthly O&amp;M Performance Report that accurately describes the actual System performance as measured against the Performance Requirements section <b>shall be submitted in writing to the Joint Board each month no later than the 7th business day of the month.</b> If there is a deviation from the approved Performance Requirements agreements, the Toll System Provider shall identify a corrective action plan for all deviations. The Monthly O&amp;M Performance Report shall also include the inventory levels and performance of all equipment in the TCS. The first Monthly O &amp;M Performance Report shall be delivered 30 days after commencement of the Pre-Toll Operations. The Monthly O&amp;M Performance Report also shall include a statement of the number and type of accounts serviced during such month and the associated staffing levels for each account type during this reporting period. For non-ETC accounts, the Monthly O&amp;M Performance Report shall identify the number of accounts and full time equivalent staff that were serviced for all Customer Statements in each of the following statuses: 1) invoices, 2) Violations, and 3) Collection Status Violations (stated in total and separately for each state). The Toll System Provider shall also indicate the number of accounts and full time equivalent staff used for administrative hearings, and those accounts that were sent to court during the monthly reporting period. The Monthly O&amp;M Performance Report shall specify for each Customer Statement status the number of accounts in such status during the reporting period and the corresponding full time equivalent staff associated with each status on a monthly basis.</p>	X	
	<p>Proposer Response:  Kapsch fully complies with requirement TP-030 , and this compliance is described below:  Thirty days after the commencement of pre-toll activities, the Kapsch Team will submit the first Monthly Operations and Maintenance Report which will be updated on a regular basis, no later than the fifth day of each month thereafter. Performance metrics will be reported and any negative deviations from the approved KPI levels will be accompanied by a corrective action plan. Subsequent reports will include the results of the corrective action plan until the performance levels are once again at or above required levels. The report will, in addition, include inventory levels of TCS equipment so the Joint Board has a clear understanding of the status of the TCS and its operations.  Kapsch will provide the first O&amp;M Performance Report 30 days after the start of Pre-Toll Operations. The report will be prepared and presented to the Joint Board by the O&amp;M Program Manager and will at a minimum include:</p> <ul style="list-style-type: none"> <li>Number and type of accounts serviced during the reported months and total up to date</li> <li>Associated staffing levels for each account type during the reporting period</li> <li>Number of serviced non-ECT accounts during the reporting period and up to date including associated FTE staff</li> <li>Invoice statuses for each state</li> <li>Violations overview for each state</li> <li>Collection Status violations update for each state</li> <li>Number of administrative hearings and allocated FTE staff</li> <li>List of accounts sent to court during reporting period</li> <li>List of all customer account statuses showing:</li> <li>Number of accounts in that status</li> <li>FTE equivalent staff servicing accounts in that status</li> <li>Accounts sent to court during the reporting period and associated FTE equivalent staff assigned</li> </ul> <p>Additional content of the monthly O&amp;M report such as system availability summaries, overview over all maintenance action performed during the reporting period, warranty status of the deployed hardware in the system, etc. are listed in the response to the O&amp;M requirements of this RFP.  Kapsch will regularly review the content and format of the Monthly O&amp;M report and modify it based on the Joint Board's feedback as requested.</p>		
TP-032	<b>Access to TSP Facilities</b>	X	

Req ID	Plans and Testing (Section TP)	Required	Value Add
	The Joint Board's Designated Representatives shall have access to the Toll System Provider's facilities and personnel at all times. The TSP shall provide an office for 2 people at the CSC for the Joint Board's use at any time. This office shall include a network workstation, phone and location for a member of the Joint Board's team to remain on site 100% of their time, if desired by the Joint Board.		
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TP-031 , and this compliance is described below:  The Kapsch Team shall provide open access to the project facilities and personnel to the Joint Board's designated representatives. To facilitate this access, the Kapsch Team shall provide office space for two people for their use at any time, including being located at our office in Louisville, KY 100% of the time. The CSC operations will be hosted at Kapsch Team member MSB's current operations center in Austin, Texas which leverages an existing facility and provides the project with both schedule and cost benefits. Based upon the Joint Board's preferences, their staff office can be located in Austin at the CSC operations, at one of the local IN/KY walk up centers, or at the local Kapsch project office which will be located in the Louisville, KY area, as selected by the Joint Board.</p>		
TP-033	<p><b>Disaster Recovery System Plan</b></p> <p>The Toll System Provider shall provide a TCS Disaster Recovery System Plan and subsequent disaster recovery procedures for the TCS and CSC, which shall be reviewed and approved by the Joint Board <b>no later than 180 days after NTP</b>. The TCS Disaster Recovery System Plan shall include a description of each system along with a description of how each system in the TCS will be recovered. This plan shall describe all resources required to recover each system to operations. The Disaster Recovery System Plan shall also describe any single failure points in the System and the Toll System Provider's plan to recover the System.</p>	X	
	<p>Proposer Response:</p> <p>Kapsch fully complies with requirement TP-032 , and this compliance is described below:  The Disaster Recovery Plan is a key document for Continued Operational success. Kapsch will deliver a detailed DR Plan to the Joint Board for Approval no later than 180 days after NTP. The Plan will be based on a standard Disaster Recovery and Business Continuation Plan for Roadside Systems and BOS developed by the Kapsch Team that will be amended and submitted to the Joint Board for review and approval. The document addresses the management approach and strategies for maintaining or restoring business continuity for both the system and service center operations in the event of a disaster. The plan includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>• Disaster Risks &amp; Prevention</li> <li>• Documents &amp; Checklists</li> <li>• Replacement Equipment</li> <li>• Disaster Declaration &amp; Notification</li> <li>• Activation of Disaster Recovery Plan</li> <li>• Damage Assessment</li> <li>• Failover &amp; Verification Procedures</li> <li>• Disaster Recovery Planning</li> <li>• Secondary Production Facility</li> <li>• Back-ups</li> <li>• Disaster Recovery Teams</li> <li>• Equipment Protection &amp; Salvage</li> <li>• Emergency Procurement Procedures</li> <li>• Switchover Procedures</li> </ul> <p><b>CSC &amp; Toll Operations Disaster Recovery &amp; Business Continuity Plan</b></p> <p>Additionally, disaster recovery procedures will be included in the Standard Operating Procedures (SOPs) for both CSC and Toll Operations addressing declaration and notification procedures, and facility specific procedures in addressing various emergency scenarios.</p> <p>The Kapsch Team will take the responsibility for operating a safe and secure work environment very seriously. The Kapsch staff and subcontractors will be required to provide continuity of service, even during emergencies, such as fire, accident and rescue operations, strikes, civil disturbances, natural disasters and military contingency operations.</p> <p>The team will develop an emergency plan that describes the actions to be taken so facilities are adequately maintained and protected in an emergency. These SOPs and emergency plans will be submitted to the Joint Board for review and approval no later than 180 days after NTP.</p>		

03 - LSIORB\_PreliminaryProjectSchedule.mpp

ID	Task Name	Duration	Start	2015				2016				2017				2018				2019
				Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
1	<b>OHIO RIVER BRIDGES ALL ELECTRONIC OPEN TOLLING SYSTEM PROJECT (ORB)</b>	780 days	Fri 5/1/15																	
2	<b>CRITICAL MILESTONES</b>	780 days	Fri 5/1/15																	
3	<b>Major Milestones</b>	780 days	Fri 5/1/15																	
4	<b>Pre-Toll Operations Major Milestones</b>	261 days	Fri 5/1/15																	
5	NTP	0 days	Fri 5/1/15																	
6	Project Schedule Approved	0 days	Thu 5/28/15																	
7	Operations Plans Approved	0 days	Thu 7/30/15																	
8	Business Rules, Requirements and Design Document Approved	0 days	Thu 7/30/15																	
9	Baseline Test Approved	0 days	Thu 12/3/15																	
10	SW. Customization Approved	0 days	Thu 10/22/15																	
11	Pre-Production Control Test Approved	0 days	Thu 12/17/15																	
12	Pre-Toll Operations Training Complete	0 days	Fri 3/25/16																	
13	Pre-Toll Operations Commencement	0 days	Fri 4/1/16																	
14	Pre-Toll Operations Test Approved	0 days	Fri 4/29/16																	
15	<b>New Down Town Bridge (DB) Major Milestones</b>	212 days	Fri 4/29/16																	
16	DB / I-65 NB Construction Substantial Completion	0 days	Fri 4/29/16																	
17	DB / I-65 NB System Production Readiness Test Approved	0 days	Mon 10/24/16																	
18	DB / I-65 NB Roadside Installation Approved	0 days	Fri 9/16/16																	
19	DB / I-65 NB Bi-Directional Tolling / Revenue Service Commencement (Bi-Directional)	0 days	Mon 9/26/16																	
20	DB / I-65 NB System Operations Test Approved	0 days	Tue 2/21/17																	
21	<b>East End Bridge (EEB) Major Milestones</b>	475 days	Fri 6/3/16																	
22	EEC (KY 841 / I-265 NB and SB) Construction Substantial Completion	0 days	Fri 6/3/16																	
23	EEC (KY 841 / I-265 NB and SB) System Production Readiness Test Approved	0 days	Mon 10/24/16																	
24	EEC (KY 841 / I-265 NB and SB) Roadside Installation Approved	0 days	Fri 9/16/16																	
25	EEC (KY 841 / I-265 NB and SB) Tolling / Revenue Service Commencement	0 days	Mon 9/26/16																	
26	EEC (KY 841 / I-265 NB and SB) System Operations Test Approved	0 days	Tue 2/21/17																	
27	EEC (KY 841 / I-265 NB and SB) Site Acceptance Test Approved	0 days	Thu 3/29/18																	
28	<b>Kennedy Bridge (KB) Major Milestones</b>	323 days	Mon 1/30/17																	
29	KB / I-65 SB Construction Substantial Completion	0 days	Mon 5/29/17																	
30	KB / I-65 SB System Production Readiness Test Approved	0 days	Tue 7/4/17																	
31	KB / I-65 SB Roadside Installation Approved	0 days	Mon 1/30/17																	
32	KB / I-65 SB and NB Tolling / Revenue Service Commencement (Parallel Tolling)	0 days	Tue 6/6/17																	
33	KB / I-65 SB System Operations Test Approved	0 days	Wed 11/1/17																	
34	System Acceptance Test Approved	0 days	Thu 3/29/18																	
35	System Warranty and Maintenance Period Start	0 days	Thu 4/26/18																	
36	<b>Closing Major Milestones</b>	20 days	Thu 3/29/18																	

03 - LSIORB\_PreliminaryProjectSchedule.mpp

ID	Task Name	Duration	Start	2015				2016				2017				2018				2019		
				Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	
37	SAT Complete	0 days	Thu 3/29/18																		3/29/18 ♦ SAT Complete	
38	Toll Operations Closing Documents Complete	0 days	Thu 4/26/18																			4/26/18 ♦ Toll Operations Closing Documents Comple
39	Corporate Maintenance and Warranty Period Commencement	0 days	Thu 4/26/18																			4/26/18 ♦ Corporate Maintenance and Warranty Perio
40	Payment Milestones	776 days	Wed 5/6/15																			Payment Milestones
41	Pre-Toll Operations Payment Milestones	776 days	Wed 5/6/15																			Pre-Toll Operations Payment Milestones
79	New Down Town Bridge (DB) Payment Milestones	212 days	Fri 4/29/16																			New Down Town Bridge (DB) Payment Milestones
98	East End Bridge (EEB) Payment Milestones	212 days	Fri 4/29/16																			East End Bridge (EEB) Payment Milestones
111	Kennedy Bridge (KB) Payment Milestones	413 days	Mon 9/26/16																			Kennedy Bridge (KB) Payment Milestones
129	PRE-TOLL / BOS OPERATIONS	346 days	Fri 5/1/15																			PRE-TOLL / BOS OPERATIONS
130	PROJECT MOBILIZATION	5 days	Fri 5/1/15																			PROJECT MOBILIZATION
131	Mobilize Project Team	4 days	Fri 5/1/15																			5/1/15 □ 5/7/15
132	Conduct Project Kick-Off Meeting	1 day	Thu 5/7/15																			5/1/15   5/6/15
133	PROJECT SCHEDULE	21 days	Fri 5/1/15																			PROJECT SCHEDULE
134	Project Schedule Final Phase Start	0 days	Fri 5/1/15																			5/1/15   5/7/15
135	Prepare Project Schedule	3 days	Fri 5/1/15																			PROJECT SCHEDULE
136	Conduct Project Schedule Internal Review Meeting	1 day	Wed 5/6/15																			5/1/15 □ 5/29/15
137	Project Schedule Finalization	1 day	Thu 5/7/15																			5/1/15 ♦ Project Schedule Final Phase Start
138	Submit Project Schedule to LSIORB [Rev. 00]	0 days	Thu 5/7/15																			5/1/15   5/5/15
139	LSIORB Reviews the Initial Project Schedule and Sends Comments to Kapsch	5 days	Fri 5/8/15																			5/6/15   5/6/15
140	Work on Comments and Revise the InitialProject Schedule	5 days	Fri 5/15/15																			5/7/15   5/7/15
141	Submit Revised Document to LSIORB [Rev. 01]	0 days	Thu 5/21/15																			5/7/15 ♦ Submit Project Schedule to LSIORB [Rev. 00]
142	LSIORB Reviews and Approves the Final Project Schedule	5 days	Fri 5/22/15																			5/8/15   5/14/15
143	Project Schedule Approved	0 days	Thu 5/28/15																			5/15/15   5/21/15
144	Baseline Project Schedule for Status, Metrics and Report Purposes	1 day	Fri 5/29/15																			5/21/15 ♦ Submit Revised Document to LSIORB [Rev. 01]
145	PROJECT INITIAL PLANS and REQUIREMENTS	60 days	Thu 5/7/15																			5/22/15   5/28/15
146	System Operations Plans Start	0 days	Thu 5/7/15																			5/28/15 ♦ Project Schedule Approved
147	Project Initial Plans	60 days	Fri 5/8/15																			5/29/15   5/29/15
249	Project Test Plans	55 days	Fri 5/8/15																			PROJECT INITIAL PLANS and REQUIREMENTS
274	REQUIREMENTS and DESIGN	60 days	Thu 5/7/15																			5/7/15 □ 7/30/15
275	Requirements	5 days	Thu 5/7/15																			5/7/15 ♦ System Operations Plans Start
282	Design	55 days	Thu 5/14/15																			Project Initial Plans
306	BOM	40 days	Thu 5/28/15																			5/8/15 □ 7/30/15
307	BOM Start	0 days	Thu 5/28/15																			Project Test Plans
308	Develop and Revise final BOM	20 days	Fri 5/29/15																			5/8/15 □ 7/23/15
309	Final BOM Approval	20 days	Fri 6/26/15																			REQUIREMENTS and DESIGN
310	BOM Complete	0 days	Thu 7/23/15																			5/7/15 □ 5/14/15



03 - LSIORB\_PreliminaryProjectSchedule.mpp

ID	Task Name	Duration	Start	2015				2016				2017				2018				2019
				Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
311	SOFTWARE CUSTOMIZATION and INTEGRATION	60 days	Thu 7/30/15																	
312	Software Customization Start	0 days	Thu 7/30/15																	
313	Software Customization and Integration Related Activities	60 days	Fri 7/31/15																	
314	Software Customization and Integration Complete	0 days	Thu 10/22/15																	
315	BASELINE TEST (At Kapsch Facilities)	30 days	Thu 10/22/15																	
316	Baseline Test Requirements	10 days	Thu 10/22/15																	
325	Conduct Baseline Test	20 days	Thu 11/5/15																	
331	PRE-TOLL / BOS OPERATIONS PROCUREMENT	90 days	Fri 7/31/15																	
332	Long Lead Items Procurement	90 days	Fri 7/31/15																	
333	Walk Up Centers Procurement	30 days	Fri 10/23/15																	
334	BOS Procurement	30 days	Fri 10/23/15																	
335	CSC Procurement	30 days	Fri 10/23/15																	
336	TOC Procurement	30 days	Fri 10/23/15																	
337	Pre-Toll Operations Complete	0 days	Thu 12/3/15																	
338	PRE-TOLL / BOS OPERATIONS PLANS and REQUIREMENTS	105 days	Fri 6/26/15																	
339	Training Plan	35 days	Fri 6/26/15																	
349	BOS Installation Plan (Toll Facility Host, Final Field Installation Plans and Shop Drawings)	40 days	Thu 7/9/15																	
360	CSC Operations Plan	40 days	Thu 7/23/15																	
371	Roadside System and Network Installation Plan	40 days	Thu 8/6/15																	
382	Maintenance and Support Plan	40 days	Fri 8/21/15																	
392	Transition Plan	40 days	Fri 9/4/15																	
402	BOS Operations Plan	45 days	Fri 9/18/15																	
412	User Manuals	15 days	Fri 10/9/15																	
418	Third Party Manuals and Documentation	10 days	Fri 10/30/15																	
424	Pre-Operations Plans Complete	0 days	Thu 11/19/15																	
425	PRE-TOLL / BOS OPERATIONS TRAINING	20 days	Fri 2/26/16																	
426	Pre-Operations Training Environment	10 days	Fri 2/26/16																	
434	Conduct Training	10 days	Fri 3/11/16																	
439	PRE-TOLL / BOS OPERATIONS BUILD OUT	80 days	Thu 12/3/15																	
440	Operations Build Out Start	0 days	Thu 12/3/15																	
441	BOS and CSC Installation and Integration	60 days	Thu 12/3/15																	
450	Walk-Up Centers (WUC) Installation and Integration	60 days	Thu 12/3/15																	
454	TOC Installation and Integration	60 days	Thu 12/3/15																	
458	BOS, CSC, TOC and WUC System End to End Integration	20 days	Thu 2/25/16																	
469	PRE-PRODUCTION CONTROLLED TEST (At Kapsch Facilities)	30 days	Thu 12/3/15																	
470	Pre-Production (Installation) Controlled Test Requirements	10 days	Thu 12/3/15																	

03 - LSIORB\_PreliminaryProjectSchedule.mpp

ID	Task Name	Duration	Start	2015				2016				2017				2018				2019	
				Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1
478	Pre-Production (Installation) Controlled Test (At Kapsch Facilities)	20 days	Thu 12/17/15																		
484	PRE-TOLL / BOS OPERATIONS DEPLOYMENT	6 days	Thu 3/24/16																		
485	Pre-Toll / BOS Production Deployment Start	0 days	Thu 3/24/16																		
486	Pre-Operations Environment Preparation on both CSC and Roadside	2 days	Fri 3/25/16																		
487	Pre-Operations Network Connectivity Ready for Deployment	2 days	Tue 3/29/16																		
488	Ready for Deployment	0 days	Wed 3/30/16																		
489	End to End System Deployment for Pre-Operations Commencement	2 days	Thu 3/31/16																		
490	PRE-TOLL / BOS OPERATIONS COMMENCEMENT	0 days	Fri 4/1/16																		
491	DB / I-65 NB Pre-Toll Operations Commencement	0 days	Fri 4/1/16																		
492	PRE-TOLL / BOS OPERATIONS READINESS TEST	30 days	Fri 3/18/16																		
493	Pre-Toll / BOS Production Readiness Test Requirements	10 days	Fri 3/18/16																		
501	Conduct Pre-Toll / BOS Production Readiness Test	20 days	Fri 4/1/16																		
507	PRE-TOLL / BOS OPERATIONS CLOSING DOCUMENTS	20 days	Fri 4/1/16																		
508	PRE-TOLL / BOS Operations Final Parts and Spare Parts List	20 days	Fri 4/1/16																		
515	PRE-TOLL / BOS / TCS As-Built System Documentation	20 days	Fri 4/1/16																		
522	System Closing Documents Complete	0 days	Fri 4/29/16																		
523	PRE-TOLL / BOS OPERATIONS MONITORING	85 days	Fri 4/1/16																		
524	Pre-Toll Operation Monitoring Period Start	0 days	Fri 4/1/16																		
525	120-Day System Monitoring During Pre-Toll Operations	120 edays	Fri 4/1/16																		
526	Pre-Toll Operation Monitoring Period Finish	0 days	Sat 7/30/16																		
527	PRE-TOLL / BOS OPERATIONS TEST	60 days	Fri 6/3/16																		
528	Pre-Toll / BOS Operations Test Plans and Documents	35 days	Fri 6/3/16																		
553	Conduct Pre-Toll / BOS Operations Test	20 days	Sat 7/30/16																		
559	NEW DOWNTOWN BRIDGE (DB) TOLLING	302 days	Mon 12/28/15																		
560	DB PROCUREMENT	90 days	Mon 12/28/15																		
561	DB Long Lead Items Procurement	90 days	Mon 12/28/15																		
562	DB Roadside Procurement	30 days	Mon 3/21/16																		
563	DB CONSTRUCTION SUBSTANTIAL COMPLETION and SITE AVAILABILITY - EXTERNAL DEPENDANCY	0 days	Fri 4/29/16																		
564	DB Sunstantial Completion by LSIORB Construction Contractor	0 days	Fri 4/29/16																		
565	Kapsch Roadside Site Availability to Start Installation	0 days	Fri 4/29/16																		
566	DB SITE MOBILIZATION	20 days	Fri 4/29/16																		
567	LSIORB Send Official Notification to TSP for New Downtown Bridge Site Mobilization	0 days	Fri 4/29/16																		
568	Infrastructure Turnover to Kapsch for New Downtown Bridge	20 days	Mon 5/2/16																		
569	LSIORB Send Official Notification to TSP for Site Mobilization	0 days	Fri 5/27/16																		
570	DB PRE-REVENUE SERVICES PLANS and REQUIREMENTS	35 days	Thu 7/28/16																		
571	Maintenance of Traffic Plan (One-Time)	30 days	Thu 7/28/16																		

03 - LSIORB\_PreliminaryProjectSchedule.mpp

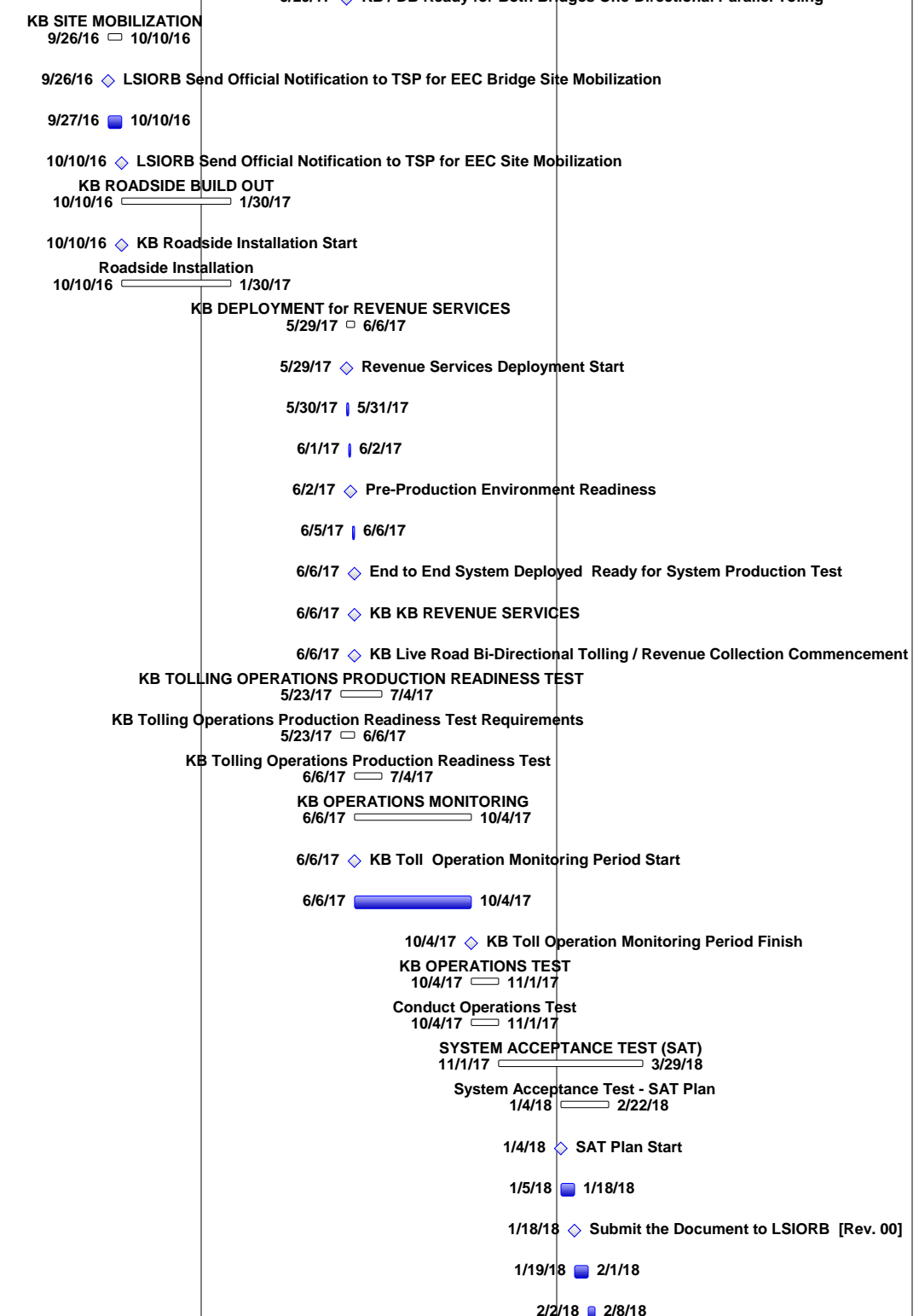
ID	Task Name	Duration	Start	2015				2016				2017				2018				2019	
				Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1
581	Roadside System Plan (One-Time)	30 days	Thu 8/4/16																		
591	Generator Plans, Cut Sheets and Documentation (One-Time)	5 days	Thu 8/11/16																		
597	DB PRE-REVENUE SERVICES PLANS and REQUIREMENTS Compltr	0 days	Wed 9/14/16																		
598	DB TOLLING OPERATIONS TRAINING	20 days	Mon 8/22/16																		
599	Pre-Tolling Training Environment	10 days	Mon 8/22/16																		
607	Conduct Training	10 days	Mon 9/5/16																		
612	DB ROADSIDE BUILD OUT	80 days	Fri 5/27/16																		
613	DB Roadside Installation Start	0 days	Fri 5/27/16																		
614	Roadside Installation	80 days	Fri 5/27/16																		
641	DB DEPLOYMENT for REVENUE SERVICES	6 days	Fri 9/16/16																		
642	Revenue Services Deployment Start	0 days	Fri 9/16/16																		
643	Pre-Production Environemnt Preparation on both CSC and Roadside	2 days	Mon 9/19/16																		
644	Pre-Production Network Conectivity Ready for Deployment	2 days	Wed 9/21/16																		
645	Pre-Production Environment Readiness	0 days	Thu 9/22/16																		
646	End to End System Deployment Ready for Tolling Commencement / Revenue Services	2 days	Fri 9/23/16																		
647	End to End System Deployed Ready for System Production Test	0 days	Mon 9/26/16																		
648	DB REVENUE SERVICES (Bi-Directional)	0 days	Mon 9/26/16																		
649	DB Live Road Bi-Directional Tolling / Revenue Collection Commencement	0 days	Mon 9/26/16																		
650	DB TOLLING OPERATIONS PRODUCTION READINESS TEST	30 days	Mon 9/12/16																		
651	DB Tolling Operations Production Readiness Test Requirements	10 days	Mon 9/12/16																		
660	DB Tolling Operations Production Readiness Test	20 days	Mon 9/26/16																		
666	DB OPERATIONS MONITORING	86 days	Mon 9/26/16																		
667	DB Toll Operation Monitoring Period Start	0 days	Mon 9/26/16																		
668	120-Day System Monitoring During DB Toll Operations	120 edays	Mon 9/26/16																		
669	DB Toll Operation Monitoring Period Finish	0 days	Tue 1/24/17																		
670	DB TOLL OPERATIONS TEST	60 days	Tue 11/29/16																		
671	Toll Operations Test Plan (One-Time)	35 days	Tue 11/29/16																		
682	Conduct DB Toll Operations Test	20 days	Tue 1/24/17																		
688	EAST END CROSSING (EEC) TOLLING	302 days	Mon 12/28/15																		
689	EEC PROCUREMENT	90 days	Mon 12/28/15																		
690	EEC Long Lead Items Procurement	90 days	Mon 12/28/15																		
691	EEC Roadside Procurement	30 days	Mon 3/21/16																		
692	EEC CONSTRUCTION SUBSTANTIAL COMPLETION and SITE AVAILABILITY - EXTERNAL DEPENDANCY	0 days	Fri 4/29/16																		
693	EEC Sunstantial Completion by LSIORB Construction Contractor	0 days	Fri 4/29/16																		
694	Kapsch Roadside Site Availability to Start Installation	0 days	Fri 4/29/16																		
695	EEC SITE MOBILIZATION	20 days	Fri 4/29/16																		

03 - LSIORB\_PreliminaryProjectSchedule.mpp

ID	Task Name	Duration	Start	2015				2016				2017				2018				2019	
				Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1
696	LSIORB Send Official Notification to TSP for EEC Bridge Site Mobilization	0 days	Fri 4/29/16																		
697	Infrastructure Turnover to Kapsch for EEC Bridge	20 days	Mon 5/2/16																		
698	LSIORB Send Official Notification to TSP for EEC Site Mobilization	0 days	Fri 5/27/16																		
699	<b>EEC ROADSIDE BUILD OUT</b>	<b>80 days</b>	<b>Fri 5/27/16</b>																		
700	EEC Roadside Installation Start	0 days	Fri 5/27/16																		
701	Roadside Installation	80 days	Fri 5/27/16																		
728	<b>EEC DEPLOYMENT for REVENUE SERVICES</b>	<b>6 days</b>	<b>Fri 9/16/16</b>																		
729	Revenue Services Deployment Start	0 days	Fri 9/16/16																		
730	Pre-Production Environemnt Preparation on both CSC and Roadside	2 days	Mon 9/19/16																		
731	Pre-Production Network Conectivity Ready for Deployment	2 days	Wed 9/21/16																		
732	Pre-Production Environment Readiness	0 days	Thu 9/22/16																		
733	End to End System Deployment Ready for Tolling Commencement / Revenue Services	2 days	Fri 9/23/16																		
734	End to End System Deployed Ready for System Production Test	0 days	Mon 9/26/16																		
735	<b>EEC REVENUE SERVICES (Bi-Directional)</b>	<b>0 days</b>	<b>Mon 9/26/16</b>																		
736	EEC Live Road Bi-Directional Tolling / Revenue Collection Commencement	0 days	Mon 9/26/16																		
737	<b>EEC TOLLING OPERATIONS PRODUCTION READINESS TEST</b>	<b>30 days</b>	<b>Mon 9/12/16</b>																		
738	EEC Tolling Operations Production Readiness Test Requirements	10 days	Mon 9/12/16																		
747	EEC Tolling Operations Production Readiness Test	20 days	Mon 9/26/16																		
753	<b>EEC OPERATIONS MONITORING</b>	<b>86 days</b>	<b>Mon 9/26/16</b>																		
754	EEC Toll Operation Monitoring Period Start	0 days	Mon 9/26/16																		
755	120-Day System Monitoring During EEC Toll Operations	120 edays	Mon 9/26/16																		
756	EEC Toll Operation Monitoring Period Finish	0 days	Tue 1/24/17																		
757	<b>EEC OPERATIONS TEST</b>	<b>20 days</b>	<b>Mon 10/24/16</b>																		
758	Conduct Operations Test	20 days	Mon 10/24/16																		
764	<b>EEC TOLL OPERATIONS TEST</b>	<b>20 days</b>	<b>Tue 1/24/17</b>																		
765	Conduct EEC Toll Operations Test	20 days	Tue 1/24/17																		
771	<b>KENNEDY BRIDGE</b>	<b>377 days</b>	<b>Tue 5/24/16</b>																		
772	<b>KB PROCUREMENT</b>	<b>90 days</b>	<b>Tue 5/24/16</b>																		
773	KB Long Lead Items Procurement	90 days	Tue 5/24/16																		
774	KB Roadside Procurement	30 days	Tue 8/16/16																		
775	<b>KB RE-DECKING SUBSTANTIAL COMPLETION and SITE AVAILABILITY DURING DB PARALLEL TOLLING - EXTERNAL DEPENDANCY</b>	<b>164 days</b>	<b>Mon 9/26/16</b>																		
776	KB Re-Decking Period Start KB by LSIORB Construction Contractor	0 days	Mon 9/26/16																		
777	KB Re-Decking Work Period by LSIORB Construction Contractor	230 edays	Mon 9/26/16																		
778	KB Re-Decking Period by LSIORB Construction ContractorComplete	0 days	Sun 5/14/17																		
779	<b>KB / DB SHIFTING PROCESS FROM BI-DIRECTIONAL to ONE-DIRECTIONALS / PARALLEL TOLLING</b>	<b>11 days</b>	<b>Sun 5/14/17</b>																		
780	KB/DB Tolling Transition Start	0 days	Sun 5/14/17																		

03 - LSIORB\_PreliminaryProjectSchedule.mpp

ID	Task Name	Duration	Start	2015				2016				2017				2018				2019		
				Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	
781	Revenue Service Transition Related Work from DB/I-65 NB Bi-Directional to I-65 NB/SB Parallel C	5 days	Mon 5/15/17																			
782	DB Bi-Directional Equipments De-Mount to Warehouse To be Used as Spare Parts	5 days	Mon 5/22/17																			
783	Prepare Final Spare Parts List for Inventory Management	1 day	Mon 5/29/17																			
784	KB / DB Ready for Both Bridges One-Directional Parallel Toling	0 days	Mon 5/29/17																			
785	<b>KB SITE MOBILIZATION</b>	<b>10 days</b>	<b>Mon 9/26/16</b>																			
786	LSIORB Send Official Notification to TSP for EEC Bridge Site Mobilization	0 days	Mon 9/26/16																			
787	Infrastructure Turnover to Kapsch for EEC Bridge	10 days	Tue 9/27/16																			
788	LSIORB Send Official Notification to TSP for EEC Site Mobilization	0 days	Mon 10/10/16																			
789	<b>KB ROADSIDE BUILD OUT</b>	<b>80 days</b>	<b>Mon 10/10/16</b>																			
790	KB Roadside Installation Start	0 days	Mon 10/10/16																			
791	<b>Roadside Installation</b>	<b>80 days</b>	<b>Mon 10/10/16</b>																			
818	<b>KB DEPLOYMENT for REVENUE SERVICES</b>	<b>6 days</b>	<b>Mon 5/29/17</b>																			
819	Revenue Services Deployment Start	0 days	Mon 5/29/17																			
820	Pre-Production Environemnt Preparation on both CSC and Roadside	2 days	Tue 5/30/17																			
821	Pre-Production Network Conectivity Ready for Deployment	2 days	Thu 6/1/17																			
822	Pre-Production Environment Readiness	0 days	Fri 6/2/17																			
823	End to End System Deployment Ready for Tolling Commencement / Revenue Services	2 days	Mon 6/5/17																			
824	End to End System Deployed Ready for System Production Test	0 days	Tue 6/6/17																			
825	<b>KB KB REVENUE SERVICES</b>	<b>0 days</b>	<b>Tue 6/6/17</b>																			
826	KB Live Road Bi-Directional Tolling / Revenue Collection Commencement	0 days	Tue 6/6/17																			
827	<b>KB TOLLING OPERATIONS PRODUCTION READINESS TEST</b>	<b>30 days</b>	<b>Tue 5/23/17</b>																			
828	KB Tolling Operations Production Readiness Test Requirements	10 days	Tue 5/23/17																			
837	KB Tolling Operations Production Readiness Test	20 days	Tue 6/6/17																			
843	<b>KB OPERATIONS MONITORING</b>	<b>86 days</b>	<b>Tue 6/6/17</b>																			
844	KB Toll Operation Monitoring Period Start	0 days	Tue 6/6/17																			
845	120-Day System Monitoring During KB Toll Operations	120 edays	Tue 6/6/17																			
846	KB Toll Operation Monitoring Period Finish	0 days	Wed 10/4/17																			
847	<b>KB OPERATIONS TEST</b>	<b>20 days</b>	<b>Wed 10/4/17</b>																			
848	Conduct Operations Test	20 days	Wed 10/4/17																			
854	<b>SYSTEM ACCEPTANCE TEST (SAT)</b>	<b>106 days</b>	<b>Wed 11/1/17</b>																			
855	System Acceptance Test - SAT Plan	35 days	Thu 1/4/18																			
856	SAT Plan Start	0 days	Thu 1/4/18																			
857	Conduct Document(s) Internal Review Meeting	10 days	Fri 1/5/18																			
858	Submit the Document to LSIORB [Rev. 00]	0 days	Thu 1/18/18																			
859	LSIORB Reviews the Initial Document and Sends Comments to Kapsch	10 days	Fri 1/19/18																			
860	Work on Comments and Revise the Initial Document	5 days	Fri 2/2/18																			



03 - LSIORB\_PreliminaryProjectSchedule.mpp

ID	Task Name	Duration	Start	2015				2016				2017				2018				2019							
				Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1						
861	Submit Revised Document to LSIORB [Rev. 01]	0 days	Thu 2/8/18															2/8/18								2/8/18	Submit Revised Document to LSIORB [Rev. 01]
862	LSIORB Reviews and Approves the Final Document	10 days	Fri 2/9/18															2/9/18								2/22/18	
863	SAT Plan Approved	0 days	Thu 2/22/18															2/22/18									SAT Plan Approved
864	<b>KB Post-Operations Test Monitoring</b>	<b>86 days</b>	<b>Wed 11/1/17</b>																								<b>KB Post-Operations Test Monitoring</b>
865	KB Post-Operations Test Monitoring Period Start	0 days	Wed 11/1/17															11/1/17									KB Post-Operations Test Monitoring Period Start
866	120-Day System Monitoring During Toll Post-Operations	120 edays	Wed 11/1/17															11/1/17									120-Day System Monitoring During Toll Post-Operations
867	KB Post-Operations Test Monitoring Finish	0 days	Thu 3/1/18															3/1/18									KB Post-Operations Test Monitoring Finish
868	<b>Conduct System Acceptance Test - SAT</b>	<b>20 days</b>	<b>Thu 3/1/18</b>																								<b>Conduct System Acceptance Test - SAT</b>
869	System Acceptance Test Start	0 days	Thu 3/1/18															3/1/18									System Acceptance Test Start
870	Conduct System Acceptance Test	5 days	Fri 3/2/18															3/2/18									Conduct System Acceptance Test
871	Prepare and Submit System Acceptance Test Reports	5 days	Fri 3/9/18															3/9/18									Prepare and Submit System Acceptance Test Reports
872	LSIORB Review & Approve System Acceptance Test Reports	10 days	Fri 3/16/18															3/16/18									LSIORB Review & Approve System Acceptance Test Reports
873	System Acceptance Test Approved	0 days	Thu 3/29/18															3/29/18									System Acceptance Test Approved
874	<b>TOLL OPERATIONS SYSTEM CLOSING DOCUMENTS</b>	<b>20 days</b>	<b>Thu 3/29/18</b>																								<b>TOLL OPERATIONS SYSTEM CLOSING DOCUMENTS</b>
875	System Operations Final Parts and Spare Parts List	20 days	Thu 3/29/18															3/29/18									System Operations Final Parts and Spare Parts List
876	System Operations Final Parts List Start	0 days	Thu 3/29/18															3/29/18									System Operations Final Parts List Start
877	Prepare the Document	10 days	Fri 3/30/18															3/30/18									Prepare the Document
878	Conduct Document Internal Review Meeting	5 days	Fri 4/13/18															4/13/18									Conduct Document Internal Review Meeting
879	Document Finalization	5 days	Fri 4/20/18															4/20/18									Document Finalization
880	Submit Document to LSIORB	0 days	Thu 4/26/18															4/26/18									Submit Document to LSIORB
881	Final Parts List Complete	0 days	Thu 4/26/18															4/26/18									Final Parts List Complete
882	<b>Toll Operations As-Built System Documentation</b>	<b>20 days</b>	<b>Thu 3/29/18</b>																								<b>Toll Operations As-Built System Documentation</b>
883	As-Built System Documentation Start	0 days	Thu 3/29/18															3/29/18									As-Built System Documentation Start
884	Prepare the Document	10 days	Fri 3/30/18															3/30/18									Prepare the Document
885	Conduct Document Internal Review Meeting	5 days	Fri 4/13/18															4/13/18									Conduct Document Internal Review Meeting
886	Document Finalization	5 days	Fri 4/20/18															4/20/18									Document Finalization
887	Submit Document to LSIORB	0 days	Thu 4/26/18															4/26/18									Submit Document to LSIORB
888	As-Built System Documentation Complete	0 days	Thu 4/26/18															4/26/18									As-Built System Documentation Complete
889	<b>End of Contract Transition Plan</b>	<b>20 days</b>	<b>Thu 3/29/18</b>																								<b>End of Contract Transition Plan</b>
890	End of Contract Transition Plan Start	0 days	Thu 3/29/18															3/29/18									End of Contract Transition Plan Start
891	Prepare the Document	10 days	Fri 3/30/18															3/30/18									Prepare the Document
892	Conduct Document Internal Review Meeting	5 days	Fri 4/13/18															4/13/18									Conduct Document Internal Review Meeting
893	Document Finalization	5 days	Fri 4/20/18															4/20/18									Document Finalization
894	Submit Document to LSIORB	0 days	Thu 4/26/18															4/26/18									Submit Document to LSIORB
895	End of Contract Transition Plan Start	0 days	Thu 4/26/18															4/26/18									End of Contract Transition Plan Start
896	System Closing Documents Complete	0 days	Thu 4/26/18															4/26/18									System Closing Documents Complete

